SPEC® CFP2006 Result
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Oracle Corporation

Sun Fire X4270 M2 (Intel Xeon X5680 3.33GHz)

$SPECfp^{®}2006 =$ 60.4

$SPECfp\_base2006 =$ 56.5
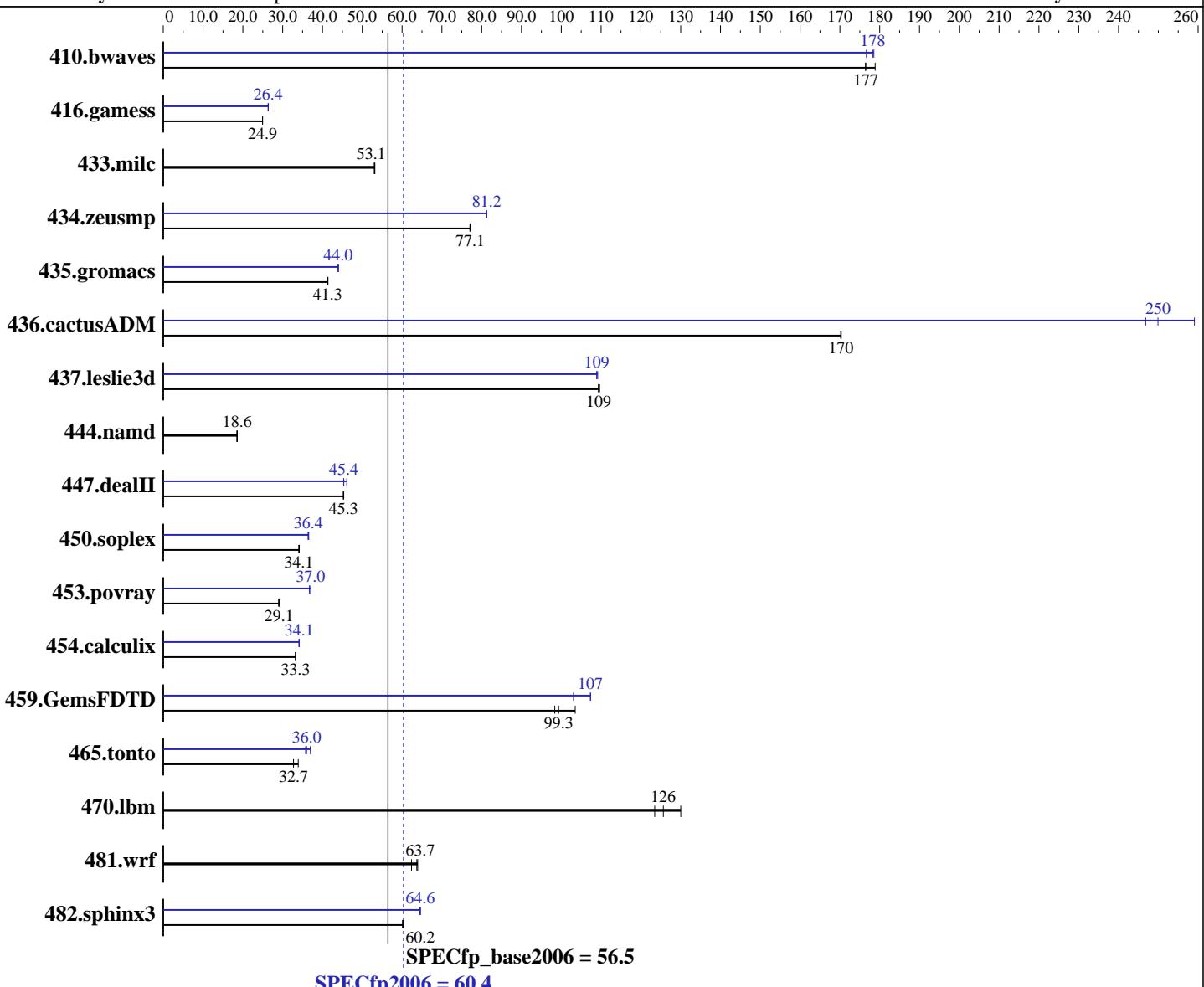
CPU2006 license: 6	**Test date:** Jul-2010
Test sponsor: Oracle Corporation	**Hardware Availability:** Aug-2010
Tested by: Oracle Corporation	**Software Availability:** Jun-2010

0 10.0 20.0 30.0 40.0 50.0 60.0 70.0 80.0 90.0 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 260

- **410.bwaves** 178 / 177
- **416.gamess** 26.4 / 24.9
- **433.milc** 53.1
- **434.zeusmp** 81.2 / 77.1
- **435.gromacs** 44.0 / 41.3
- **436.cactusADM** 250 / 170
- **437.leslie3d** 109 / 109
- **444.namd** 18.6
- **447.dealII** 45.4 / 45.3
- **450.soplex** 36.4 / 34.1
- **453.povray** 37.0 / 29.1
- **454.calculix** 34.1 / 33.3
- **459.GemsFDTD** 107 / 99.3
- **465.tonto** 36.0 / 32.7
- **470.lbm** 126
- **481.wrf** 63.7
- **482.sphinx3** 64.6 / 60.2

SPECfp_base2006 = 56.5

SPECfp2006 = 60.4

Hardware

CPU Name:	Intel Xeon X5680
CPU Characteristics:	Intel Turbo Boost Technology up to 3.60 GHz
CPU MHz:	3333
FPU:	Integrated
CPU(s) enabled:	12 cores, 2 chips, 6 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

Continued on next page

Software

Operating System:	Oracle Solaris 10 10/09
Compiler:	Oracle Solaris Studio Express 6/10
Auto Parallel:	Yes
File System:	ufs
System State:	Default
Base Pointers:	64-bit
Peak Pointers:	32/64-bit
Other Software:	Apache C++ Standard Library V4.2.1

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L3 Cache:	12 MB I+D on chip per chip
Other Cache:	None
Memory:	48 GB (12 x 4 GB DDR3-1333 CL9, 2 Rank, ECC)
Disk Subsystem:	1 x 1 TB, SATA, 7200 RPM
Other Hardware:	None

Results Table

Benchmark	Base						Peak					
	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
410.bwaves	**77.0**	**177**	77.0	176	76.0	179	76.9	177	**76.2**	**178**	76.1	179
416.gamess	785	24.9	785	24.9	**785**	**24.9**	**743**	**26.4**	743	26.4	742	26.4
433.milc	173	53.2	173	53.0	**173**	**53.1**	173	53.2	173	53.0	**173**	**53.1**
434.zeusmp	118	77.2	118	77.0	**118**	**77.1**	112	81.3	**112**	**81.2**	112	81.2
435.gromacs	173	41.4	173	41.3	**173**	**41.3**	163	43.9	**162**	**44.0**	162	44.0
436.cactusADM	70.2	170	**70.2**	**170**	70.2	170	**47.8**	**250**	48.4	247	46.1	259
437.leslie3d	85.7	110	86.0	109	**85.9**	**109**	86.3	109	**86.3**	**109**	86.1	109
444.namd	432	18.6	432	18.6	**432**	**18.6**	432	18.6	432	18.6	**432**	**18.6**
447.dealII	253	45.2	252	45.3	**253**	**45.3**	**252**	**45.4**	248	46.1	252	45.3
450.soplex	**245**	**34.1**	244	34.2	245	34.1	229	36.4	228	36.6	**229**	**36.4**
453.povray	183	29.1	183	29.0	**183**	**29.1**	143	37.1	**144**	**37.0**	145	36.7
454.calculix	248	33.2	**248**	**33.3**	248	33.3	241	34.2	242	34.1	**242**	**34.1**
459.GemsFDTD	108	98.4	**107**	**99.3**	103	103	98.8	107	**98.9**	**107**	103	103
465.tonto	**301**	**32.7**	290	33.9	301	32.7	266	36.9	275	35.8	**273**	**36.0**
470.lbm	106	130	**109**	**126**	111	123	106	130	**109**	**126**	111	123
481.wrf	**175**	**63.7**	179	62.4	175	63.9	**175**	**63.7**	179	62.4	175	63.9
482.sphinx3	**324**	**60.2**	324	60.2	324	60.1	302	64.6	302	64.5	**302**	**64.6**

Results appear in the order in which they were run. Bold underlined text indicates a median measurement.

Compiler Invocation Notes

```
The Apache C++ Standard Library V4.2.1 was installed from
http://stdcxx.apache.org/download.html using:
    alias gmake=specmake
    gmake BUILDTYPE=8D CONFIG=sunpro.config
```

Operating System Notes

```
ulimit -s 131072  (shell): increases stack

/etc/system parameters
    tune_t_fsflushr=10
    autoup=900
    lpg_alloc_prefer=1
```

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Platform Notes

```
    Default BIOS settings used except:
      Hardware Prefetch            : Enabled
      Adjacent Cache Line Prefetch : Enabled
      Data Reuse Optimization      : Disabled
      Intel C-STATE technology     : Disabled
```

General Notes

```
Environment variables set by runspec before the start of the run:
OMP_NUM_THREADS = "12"
SUNW_MP_PROCBIND = "23 22 21 20 19 18 17 16 15 14 13 12 11 10 9 8 7 6 5 4 3 2 1 0"
SUNW_MP_THR_IDLE = "SPIN"

447.dealII (peak): "apache_stdcxx_4_2_1" src.alt was used.

447.dealII (base): "apache_stdcxx_4_2_1" src.alt was used.
```

Base Compiler Invocation

C benchmarks:
```
    cc
```

C++ benchmarks:
```
    CC
```

Fortran benchmarks:
```
    f90
```

Benchmarks using both Fortran and C:
```
    cc f90
```

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
     436.cactusADM: -DSPEC_CPU_LP64
       437.leslie3d: -DSPEC_CPU_LP64
          444.namd: -DSPEC_CPU_LP64
         447.dealII: -DSPEC_CPU_LP64
         450.soplex: -DSPEC_CPU_LP64
```

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Base Portability Flags (Continued)

```
  453.povray: -DSPEC_CPU_LP64
  454.calculix: -DSPEC_CPU_LP64
 459.GemsFDTD: -DSPEC_CPU_LP64
    465.tonto: -DSPEC_CPU_LP64
     470.lbm: -DSPEC_CPU_LP64
      481.wrf: -DSPEC_CPU_LP64 -DSPEC_CPU_WORDS_LITTLEENDIAN
  482.sphinx3: -DSPEC_CPU_LP64
```

Base Optimization Flags

C benchmarks:
```
     -fast -xipo=2 -m64 -xautopar -xreduction
```

C++ benchmarks:
```
     -fast -xipo=2 -m64 -xalias_level=compatible -library=no%Cstd
     -I/data1/stdcxx-4.2.1/include -I/data1/stdcxx-4.2.1/build/include
     -L/data1/stdcxx-4.2.1/build/lib -R/data1/stdcxx-4.2.1/build/lib -lstd8D
```

Fortran benchmarks:
```
     -fast -xipo=2 -m64 -xautopar -xreduction
```

Benchmarks using both Fortran and C:
```
     -fast(cc) -xipo=2 -m64 -xautopar -xreduction -fast(f90)
```

Base Other Flags

C benchmarks:
```
     -V -# -xjobs=24
```

C++ benchmarks:
```
     -verbose=diags,version -xjobs=24
```

Fortran benchmarks:
```
     -V -v -xjobs=24
```

Benchmarks using both Fortran and C:
```
     -V -# -xjobs=24 -v
```

Peak Compiler Invocation

C benchmarks:
```
     cc
```

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Peak Compiler Invocation (Continued)

C++ benchmarks:
 CC

Fortran benchmarks:
 f90

Benchmarks using both Fortran and C:
 cc f90

Peak Portability Flags

      433.milc: -DSPEC_CPU_LP64
 436.cactusADM: -DSPEC_CPU_LP64
     444.namd: -DSPEC_CPU_LP64
      470.lbm: -DSPEC_CPU_LP64
      481.wrf: -DSPEC_CPU_LP64 -DSPEC_CPU_WORDS_LITTLEENDIAN

Peak Optimization Flags

C benchmarks:

      433.milc: basepeak = yes

       470.lbm: basepeak = yes

    482.sphinx3: -fast -xipo=2 -m64 -xpagesize=2M -xalias_level=std
              -xrestrict -xprefetch=no%auto -xautopar -xreduction

C++ benchmarks:

      444.namd: basepeak = yes

     447.dealII: -fast -xipo=2 -m64 -xpagesize=2M -xalias_level=compatible
              -library=no%Cstd -I/data1/stdcxx-4.2.1/include
              -I/data1/stdcxx-4.2.1/build/include
              -L/data1/stdcxx-4.2.1/build/lib
              -R/data1/stdcxx-4.2.1/build/lib -lstd8D

     450.soplex: -xprofile=collect:./feedback(pass 1)
              -xprofile=use:./feedback(pass 2) -fast -xipo=2
              -xpagesize=2M -xalias_level=compatible -library=stlport4
              -m64

     453.povray: -xprofile=collect:./feedback(pass 1)
              -xprofile=use:./feedback(pass 2) -fast -xipo=2 -m64
              -xpagesize=2M -xvector=no%simd -xalias_level=compatible
              -library=stlport4 -qoption iropt -Atile:skewp

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Peak Optimization Flags (Continued)

453.povray (continued):
```
-qoption iropt -Ainline:cs=700
```

Fortran benchmarks:

410.bwaves: `-xprofile=collect:./feedback`(pass 1)
`-xprofile=use:./feedback`(pass 2) `-fast -xipo=2 -m64`
`-xpagesize=2M -xprefetch=no%auto -xautopar -xreduction`

416.gamess: `-fast -xipo=2 -m64 -xpagesize=2M -xunroll=1`
`-xvector=no%simd`

434.zeusmp: `-xprofile=collect:./feedback`(pass 1)
`-xprofile=use:./feedback`(pass 2) `-fast -xipo=2 -m64`
`-xautopar -xreduction`

437.leslie3d: `-xprofile=collect:./feedback`(pass 1)
`-xprofile=use:./feedback`(pass 2) `-fast -xipo=2 -m64`
`-Qoption ube -xprefetch_mult=2 -xautopar -xreduction`

459.GemsFDTD: `-xprofile=collect:./feedback`(pass 1)
`-xprofile=use:./feedback`(pass 2) `-fast -xipo=2 -m64`
`-xpagesize=2M -xautopar -xreduction`

465.tonto: `-xprofile=collect:./feedback`(pass 1)
`-xprofile=use:./feedback`(pass 2) `-fast -xipo=2 -m64`
`-xpagesize=2M -xautopar -xreduction -xprefetch=no%auto`
`-stackvar -xalias -lumem`

Benchmarks using both Fortran and C:

435.gromacs: `-xprofile=collect:./feedback`(pass 1)
`-xprofile=use:./feedback`(pass 2) `-fast`(cc) `-fast`(f90)
`-xvector=no%simd -xipo=2 -m64 -xpagesize=2M`
`-Qoption ube -fsimple=3 -xautopar -xreduction`

436.cactusADM: `-xprofile=collect:./feedback`(pass 1)
`-xprofile=use:./feedback`(pass 2) `-m64 -fast`(cc) `-fast`(f90)
`-xipo=0 -xpagesize=2M -xprefetch_level=2`
`-W2,-Aparallel:nthreads=24`
`-Qoption iropt -Aparallel:nthreads=24 -xautopar -xreduction`
`-lumem -lmvec`

454.calculix: `-fast`(cc) `-fast`(f90) `-xipo=2 -m64 -xpagesize=2M`
`-xunroll=3 -xprefetch_level=2`
`-xprefetch_auto_type=indirect_array_access`

481.wrf: basepeak = yes

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Peak Other Flags

C benchmarks:
```
-V -# -xjobs=24
```

C++ benchmarks:
```
-verbose=diags,version -xjobs=24
```

Fortran benchmarks:
```
-V -v -xjobs=24
```

Benchmarks using both Fortran and C:
```
-V -# -xjobs=24 -v
```

The flags file that was used to format this result can be browsed at
http://www.spec.org/cpu2006/flags/Oracle-Solaris-Studio-x86_64.20100901.html

You can also download the XML flags source by saving the following link:
http://www.spec.org/cpu2006/flags/Oracle-Solaris-Studio-x86_64.20100901.xml

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