



# SPEC® CFP2006 Result

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## Sun Microsystems Sun Fire X4200

SPECfp®\_rate2006 = 25.9

SPECfp\_rate\_base2006 = 24.3

CPU2006 license: 6

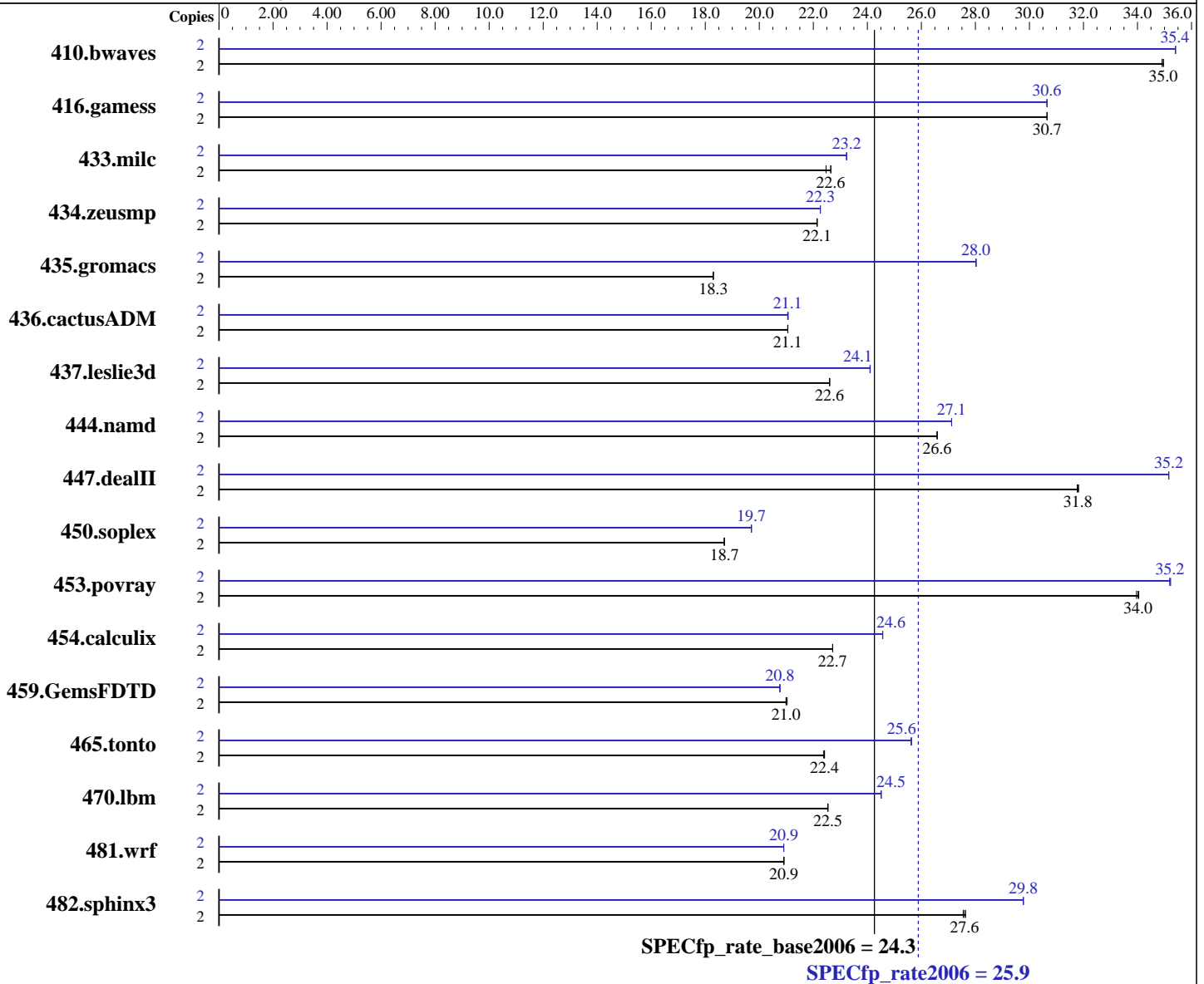
Test sponsor: Sun Microsystems

Tested by: Sun Microsystems

Test date: Apr-2006

Hardware Availability: May-2006

Software Availability: Jul-2006



### Hardware

CPU Name: AMD Opteron 256  
 CPU Characteristics:  
 CPU MHz: 3000  
 FPU: Integrated  
 CPU(s) enabled: 2 cores, 2 chips, 1 core/chip  
 CPU(s) orderable: 1-2 chips  
 Primary Cache: 64 KB I + 64 KB D on chip per chip  
 Secondary Cache: 1 MB I+D on chip per chip

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### Software

Operating System: Solaris 10 1/06  
 Compiler: Sun Studio 11 with patch 120759-06  
 Auto Parallel: No  
 File System: ufs  
 System State: Default  
 Base Pointers: 64-bit  
 Peak Pointers: 32/64-bit  
 Other Software: None



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L3 Cache: None  
Other Cache: None  
Memory: 16 GB (8x2 GB, PC3200 CL3 DDR ECC Reg)  
Disk Subsystem: SAS,36GB,10K RPM  
Other Hardware: None

## Results Table

Benchmark	Base							Peak						
	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
410.bwaves	2	777	35.0	<b><u>778</u></b>	<b><u>35.0</u></b>	779	34.9	2	<b><u>768</u></b>	<b><u>35.4</u></b>	768	35.4	767	35.4
416.gamess	2	1277	30.7	1278	30.7	<b><u>1278</u></b>	<b><u>30.7</u></b>	2	1278	30.7	1278	30.6	<b><u>1278</u></b>	<b><u>30.6</u></b>
433.milc	2	817	22.5	811	22.7	<b><u>811</u></b>	<b><u>22.6</u></b>	2	790	23.2	790	23.2	<b><u>790</u></b>	<b><u>23.2</u></b>
434.zeusmp	2	822	22.1	<b><u>822</u></b>	<b><u>22.1</u></b>	822	22.1	2	<b><u>818</u></b>	<b><u>22.3</u></b>	818	22.3	818	22.3
435.gromacs	2	780	18.3	<b><u>780</u></b>	<b><u>18.3</u></b>	781	18.3	2	510	28.0	<b><u>510</u></b>	<b><u>28.0</u></b>	510	28.0
436.cactusADM	2	1135	21.1	<b><u>1135</u></b>	<b><u>21.1</u></b>	1135	21.1	2	<b><u>1135</u></b>	<b><u>21.1</u></b>	1135	21.1	1134	21.1
437.leslie3d	2	832	22.6	<b><u>832</u></b>	<b><u>22.6</u></b>	832	22.6	2	<b><u>780</u></b>	<b><u>24.1</u></b>	780	24.1	780	24.1
444.namd	2	603	26.6	<b><u>603</u></b>	<b><u>26.6</u></b>	603	26.6	2	591	27.1	<b><u>591</u></b>	<b><u>27.1</u></b>	591	27.1
447.dealII	2	720	31.8	<b><u>720</u></b>	<b><u>31.8</u></b>	719	31.8	2	651	35.2	651	35.2	<b><u>651</u></b>	<b><u>35.2</u></b>
450.soplex	2	892	18.7	<b><u>892</u></b>	<b><u>18.7</u></b>	892	18.7	2	846	19.7	846	19.7	<b><u>846</u></b>	<b><u>19.7</u></b>
453.povray	2	312	34.0	<b><u>313</u></b>	<b><u>34.0</u></b>	313	34.0	2	302	35.2	<b><u>302</u></b>	<b><u>35.2</u></b>	302	35.2
454.calculix	2	<b><u>726</u></b>	<b><u>22.7</u></b>	726	22.7	726	22.7	2	671	24.6	672	24.6	<b><u>672</u></b>	<b><u>24.6</u></b>
459.GemsFDTD	2	1009	21.0	1011	21.0	<b><u>1011</u></b>	<b><u>21.0</u></b>	2	<b><u>1022</u></b>	<b><u>20.8</u></b>	1022	20.8	1022	20.8
465.tonto	2	878	22.4	879	22.4	<b><u>878</u></b>	<b><u>22.4</u></b>	2	<b><u>768</u></b>	<b><u>25.6</u></b>	768	25.6	768	25.6
470.lbm	2	<b><u>1219</u></b>	<b><u>22.5</u></b>	1220	22.5	1219	22.5	2	<b><u>1121</u></b>	<b><u>24.5</u></b>	1121	24.5	1121	24.5
481.wrf	2	<b><u>1068</u></b>	<b><u>20.9</u></b>	1068	20.9	1068	20.9	2	1069	20.9	1068	20.9	<b><u>1069</u></b>	<b><u>20.9</u></b>
482.sphinx3	2	<b><u>1412</u></b>	<b><u>27.6</u></b>	1415	27.5	1410	27.6	2	1309	29.8	<b><u>1309</u></b>	<b><u>29.8</u></b>	1309	29.8

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

## Operating System Notes

Processes were bound to cores using "submit" and "pbind".

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

```
/etc/system parameters  
tune_t_fsflushr=1
```

Controls how many seconds elapse between runs of the page flush daemon, fsflush.

```
autoup=900
```

Causes pages older than the listed number of seconds to be written by fsflush.



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Hardware Availability: May-2006

Software Availability: Jul-2006

## Platform Notes

Default BIOS settings were 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  
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 -xarch=amd64a

C++ benchmarks:

-fast -xipo=2 -xarch=amd64a -library=stlport4

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## Base Optimization Flags (Continued)

Fortran benchmarks:  
-fast -xipo=2 -xarch=amd64a  
Benchmarks using both Fortran and C:  
-fast(cc) -fast(f90) -xipo=2 -xarch=amd64a

## Base Other Flags

C benchmarks:  
-V  
C++ benchmarks:  
-verbose=version  
Fortran benchmarks:  
-V  
Benchmarks using both Fortran and C:  
-V

## Peak Compiler Invocation

C benchmarks:  
cc  
C++ benchmarks:  
CC  
Fortran benchmarks:  
f90  
Benchmarks using both Fortran and C:  
cc f90

## Peak Portability Flags

436.cactusADM: -DSPEC\_CPU\_LP64  
453.povray: -DSPEC\_CPU\_LP64  
481.wrf: -DSPEC\_CPU\_LP64 -DSPEC\_CPU\_WORDS\_LITTLEENDIAN



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## Peak Optimization Flags

### C benchmarks:

```
433.milc: -fast -xarch=amd64a -xipo=2 -xprefetch=auto
          -xprefetch_level=3 -xpagesize=2m

470.lbm: -fast -xarch=amd64a -xpagesize=2m -W2,-Ainline:inc=200
         -W2,-Ainline:cs=500 -xprefetch_level=3

482.sphinx3: -fast -xarch=amd64a -xrestrict -xipo=2 -xprefetch=auto
             -xpagesize=2m -Wd,-iropt-prof -W2,-Ashort_ldst:ldld
             -W2,-Ainline:rs=50 -M /usr/lib/ld/map.bssalign
```

### C++ benchmarks:

```
444.namd: -xprofile=collect:./feedback(pass 1)
          -xprofile=use:./feedback(pass 2) -fast -xarch=amd64a
          -xipo=2 -library=stlport4

447.dealII: -fast -xarch=amd64a -xipo=2 -xvector
            -Qoption iropt -Abcopy -xalias_level -xrestrict
            -xregs=frameptr -library=stlport4

450.soplex: -fast -xipo=2 -xarch=sse2a -library=stlport4

453.povray: Same as 447.dealII
```

### Fortran benchmarks:

```
410.bwaves: -fast -xarch=amd64a -unroll=5 -stackvar -xO4 -xipo=2
            -xprefetch_level=3 -Qoption iropt -Rloop_dist

416.gamess: -fast -xarch=amd64a -xipo=2 -xprefetch_level=3

434.zeusmp: -fast -xarch=amd64a -xipo=2 -xregs=frameptr

437.leslie3d: -fast -xipo=2 -xarch=sse2a

459.GemsFDTD: -fast -xarch=amd64a -xipo=2 -xprefetch_level=3
              -xpagesize=2m

465.tonto: -xprofile=collect:./feedback(pass 1)
            -xprofile=use:./feedback(pass 2) -fast -xarch=amd64a
            -xipo=2 -xvector=lib -xalias -xdepend -lbsdmalloc
```

### Benchmarks using both Fortran and C:

```
435.gromacs: -fast(cc) -fast(f90) -xipo=2 -xarch=amd64a -Wu,-fsimple=3
             -Qoption ube -fsimple=3
```

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## Peak Optimization Flags (Continued)

436.cactusADM: -fast(cc) -fast(f90) -xipo=2 -xarch=amd64a

454.calculix: -fast(cc) -fast(f90) -xarch=amd64a -xpagesize=2m  
-xprefetch=auto -xprefetch\_level=3 -W2,-Ainline:inc=200  
-W2,-Ainline:cs=500 -unroll=5 -stackvar -xO4 -xipo=2  
-Qoption iropt -Rloop\_dist

481.wrf: Same as 436.cactusADM

## Peak Other Flags

C benchmarks:  
-V

C++ benchmarks:  
-verbose=version

Fortran benchmarks:  
-V

Benchmarks using both Fortran and C:  
-V

The flags file that was used to format this result can be browsed at

<http://www.spec.org/cpu2006/flags/Sun-Solaris-Studio-Opteron.20090715.02.html>

You can also download the XML flags source by saving the following link:

<http://www.spec.org/cpu2006/flags/Sun-Solaris-Studio-Opteron.20090715.02.xml>

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For other inquiries, please contact [webmaster@spec.org](mailto:webmaster@spec.org).

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