



# SPEC® CFP2006 Result

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## Sun Microsystems

## SPECfp®\_rate2006 = 62.3

## Sun SPARC Enterprise T5220

## SPECfp\_rate\_base2006 = 57.9

CPU2006 license: 6

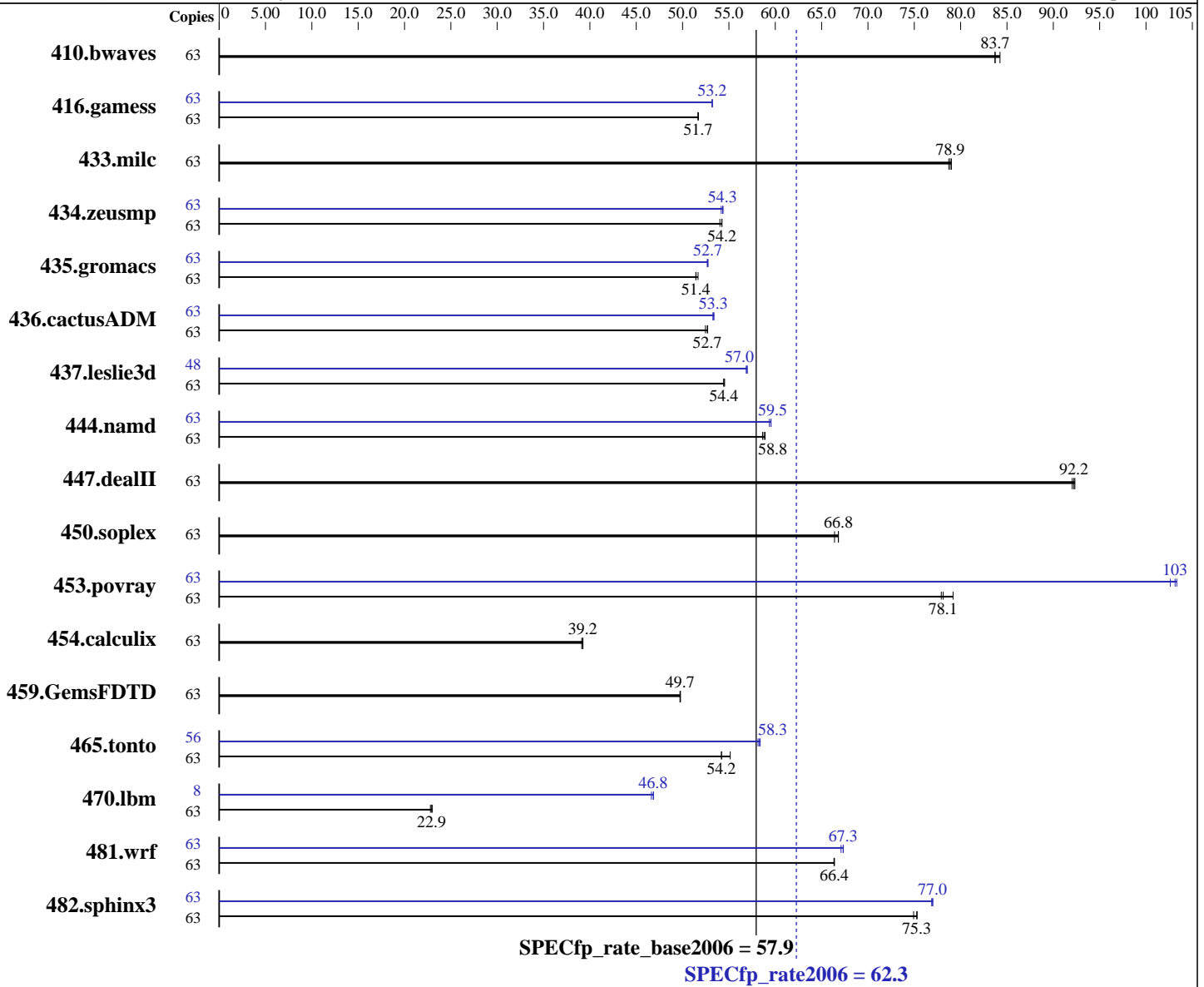
Test sponsor: Sun Microsystems

Tested by: Sun Microsystems

Test date: Jul-2007

Hardware Availability: Oct-2007

Software Availability: Sep-2007



### Hardware

CPU Name: UltraSPARC T2  
 CPU Characteristics:  
 CPU MHz: 1417  
 FPU: Integrated  
 CPU(s) enabled: 8 cores, 1 chip, 8 cores/chip, 8 threads/core  
 CPU(s) orderable: 1 chip  
 Primary Cache: 16 KB I + 8 KB D on chip per core  
 Secondary Cache: 4 MB I+D on chip per chip

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### Software

Operating System: Solaris 10 8/07 (build s10s\_u4wos\_10)  
 Compiler: Sun Studio 12 (build 2007/05/20)  
 Auto Parallel: No  
 File System: ufs  
 System State: Default  
 Base Pointers: 32-bit  
 Peak Pointers: 32-bit  
 Other Software: None



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L3 Cache: None  
Other Cache: None  
Memory: 64 GB (16 x 4 GB)  
Disk Subsystem: 275 GB Solaris Volume Manager  
RAID 0, interlace 384KB, on  
5 x SUN72G 10K RPM SAS disks;  
ufs fragment size 8192 bytes  
Other Hardware: None

### Results Table

| Benchmark     | Base   |              |             |              |             |              |             |        | Peak         |             |              |             |              |             |  |  |
|---------------|--------|--------------|-------------|--------------|-------------|--------------|-------------|--------|--------------|-------------|--------------|-------------|--------------|-------------|--|--|
|               | Copies | Seconds      | Ratio       | Seconds      | Ratio       | Seconds      | Ratio       | Copies | Seconds      | Ratio       | Seconds      | Ratio       | Seconds      | Ratio       |  |  |
| 410.bwaves    | 63     | 10163        | 84.2        | <b>10226</b> | <b>83.7</b> | 10228        | 83.7        | 63     | 10163        | 84.2        | <b>10226</b> | <b>83.7</b> | 10228        | 83.7        |  |  |
| 416.gamess    | 63     | 23870        | 51.7        | 23865        | 51.7        | <b>23868</b> | <b>51.7</b> | 63     | 23183        | 53.2        | 23195        | 53.2        | <b>23185</b> | <b>53.2</b> |  |  |
| 433.milc      | 63     | 7347         | 78.7        | 7320         | 79.0        | <b>7333</b>  | <b>78.9</b> | 63     | 7347         | 78.7        | 7320         | 79.0        | <b>7333</b>  | <b>78.9</b> |  |  |
| 434.zeusmp    | 63     | 10611        | 54.0        | <b>10570</b> | <b>54.2</b> | 10568        | 54.3        | 63     | 10544        | 54.4        | <b>10554</b> | <b>54.3</b> | 10584        | 54.2        |  |  |
| 435.gromacs   | 63     | 8746         | 51.4        | <b>8743</b>  | <b>51.4</b> | 8706         | 51.7        | 63     | 8527         | 52.8        | 8542         | 52.7        | <b>8534</b>  | <b>52.7</b> |  |  |
| 436.cactusADM | 63     | 14284        | 52.7        | <b>14295</b> | <b>52.7</b> | 14349        | 52.5        | 63     | <b>14122</b> | <b>53.3</b> | 14129        | 53.3        | 14100        | 53.4        |  |  |
| 437.leslie3d  | 63     | 10876        | 54.4        | <b>10876</b> | <b>54.4</b> | 10859        | 54.5        | 48     | 7919         | 57.0        | 7935         | 56.9        | <b>7921</b>  | <b>57.0</b> |  |  |
| 444.namd      | 63     | 8577         | 58.9        | 8618         | 58.6        | <b>8596</b>  | <b>58.8</b> | 63     | <b>8488</b>  | <b>59.5</b> | 8485         | 59.5        | 8512         | 59.4        |  |  |
| 447.dealII    | 63     | <b>7816</b>  | <b>92.2</b> | 7831         | 92.0        | 7806         | 92.3        | 63     | <b>7816</b>  | <b>92.2</b> | 7831         | 92.0        | 7806         | 92.3        |  |  |
| 450.soplex    | 63     | 7913         | 66.4        | <b>7864</b>  | <b>66.8</b> | 7864         | 66.8        | 63     | 7913         | 66.4        | <b>7864</b>  | <b>66.8</b> | 7864         | 66.8        |  |  |
| 453.povray    | 63     | 4233         | 79.2        | 4302         | 77.9        | <b>4291</b>  | <b>78.1</b> | 63     | 3266         | 103         | <b>3250</b>  | <b>103</b>  | 3244         | 103         |  |  |
| 454.calculix  | 63     | <b>13251</b> | <b>39.2</b> | 13286        | 39.1        | 13241        | 39.3        | 63     | <b>13251</b> | <b>39.2</b> | 13286        | 39.1        | 13241        | 39.3        |  |  |
| 459.GemsFDTD  | 63     | <b>13439</b> | <b>49.7</b> | 13429        | 49.8        | 13443        | 49.7        | 63     | <b>13439</b> | <b>49.7</b> | 13429        | 49.8        | 13443        | 49.7        |  |  |
| 465.tonto     | 63     | <b>11437</b> | <b>54.2</b> | 11439        | 54.2        | 11242        | 55.1        | 56     | 9439         | 58.4        | 9477         | 58.1        | <b>9453</b>  | <b>58.3</b> |  |  |
| 470.lbm       | 63     | 37983        | 22.8        | 37632        | 23.0        | <b>37763</b> | <b>22.9</b> | 8      | 2345         | 46.9        | <b>2347</b>  | <b>46.8</b> | 2357         | 46.6        |  |  |
| 481.wrf       | 63     | 10601        | 66.4        | <b>10603</b> | <b>66.4</b> | 10608        | 66.3        | 63     | 10449        | 67.3        | 10488        | 67.1        | <b>10453</b> | <b>67.3</b> |  |  |
| 482.sphinx3   | 63     | <b>16315</b> | <b>75.3</b> | 16305        | 75.3        | 16387        | 74.9        | 63     | 15972        | 76.9        | <b>15953</b> | <b>77.0</b> | 15946        | 77.0        |  |  |

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

### Compiler Invocation Notes

Compiler patches are available at  
[http://developers.sun.com/sunstudio/downloads/patches/ss12\\_patches.jsp](http://developers.sun.com/sunstudio/downloads/patches/ss12_patches.jsp)

### Operating System Notes

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

ulimit -s 131072 was used to limit the space  
consumed by the stack (and therefore make more  
Continued on next page



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## Operating System Notes (Continued)

space available to the heap).

```
/etc/system parameters
```

```
autoup=600
```

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

```
tune_t_fsflushr=10
```

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

The "webconsole" service was turned off using  
svcadm disable webconsole

## Platform Notes

This result was measured on a Sun SPARC Enterprise T5220. All of these are electronically equivalent:

- Sun SPARC Enterprise T5120
- Sun SPARC Enterprise T5220
- Fujitsu SPARC Enterprise T5120
- Fujitsu SPARC Enterprise T5220

## Base Compiler Invocation

C benchmarks:

```
cc
```

C++ benchmarks:

```
CC
```

Fortran benchmarks:

```
f90
```

Benchmarks using both Fortran and C:

```
cc f90
```

## Base Optimization Flags

C benchmarks:

```
-g -fast -xipo=2 -xpagesize=4M -xprefetch_level=2 -xalias_level=std  
-xprefetch_level=3 -xprefetch_auto_type=indirect_array_access
```

C++ benchmarks:

```
-g0 -library=stlport4 -fast -xipo=2 -xpagesize=4M -xprefetch_level=2  
-xdepend -xalias_level=compatible
```

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## Base Optimization Flags (Continued)

Fortran benchmarks:

-g -fast -xipo=2 -xpagesize=4M -xprefetch\_level=2

Benchmarks using both Fortran and C:

-g -fast(cc) -fast(f90) -xipo=2 -xpagesize=4M -xprefetch\_level=2  
-xalias\_level=std -xprefetch\_level=3  
-xprefetch\_auto\_type=indirect\_array\_access

## Base Other Flags

C benchmarks:

-xjobs=16 -V

C++ benchmarks:

-xjobs=16 -verbose=diags,version

Fortran benchmarks:

-xjobs=16 -V

Benchmarks using both Fortran and C:

-xjobs=16 -V

## Peak Compiler Invocation

C benchmarks:

cc

C++ benchmarks:

CC

Fortran benchmarks:

f90

Benchmarks using both Fortran and C:

cc f90

## Peak Optimization Flags

C benchmarks:

433.milc: basepeak = yes

470.lbm: -g -xprofile=collect:./feedback(pass 1)  
-xprofile=use:./feedback(pass 2) -fast -xpagesize=4M  
-xprefetch\_level=3 -xipo=2 -xrestrict

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Tested by: Sun Microsystems

Software Availability: Sep-2007

## Peak Optimization Flags (Continued)

482.sphinx3: -g -xprofile=collect:./feedback(pass 1)  
-xprofile=use:./feedback(pass 2) -fast -xpagesize=4M  
-xinline= -xprefetch\_level=2 -Wc,-Qlp-ol=1 -xrestrict  
-xalias\_level=strong -fsimple=1 -xlinkopt=2 -lfast

### C++ benchmarks:

444.namd: -g0 -library=stlport4 -xprofile=collect:./feedback(pass 1)  
-xprofile=use:./feedback(pass 2) -fast -xpagesize=4M  
-xdepend -xalias\_level=compatible -xprefetch\_level=1  
-xlinkopt=2

447.dealII: basepeak = yes

450.soplex: basepeak = yes

453.povray: -g0 -library=stlport4 -xprofile=collect:./feedback(pass 1)  
-xprofile=use:./feedback(pass 2) -fast -xpagesize=4M  
-xdepend -xalias\_level=compatible -xipo=2 -xrestrict  
-xlinkopt=2

### Fortran benchmarks:

410.bwaves: basepeak = yes

416.gamess: -g -xprofile=collect:./feedback(pass 1)  
-xprofile=use:./feedback(pass 2) -fast -xpagesize=4M  
-xlinkopt=2

434.zeusmp: -g -fast -xpagesize=4M -xipo=1 -qoption cg -Qeps:enabled=1  
-qoption cg -Qeps:ws=8 -lmopt

437.leslie3d: -g -fast -xpagesize\_heap=4M -xpagesize\_stack=64K  
-xprefetch\_level=3 -xprefetch=latx:1.6 -qoption cg -Qlp=1  
-qoption cg -Qlp-fa=0 -qoption cg -Qlp-fl=1  
-qoption cg -Qlp-av=448 -qoption cg -Qlp-t=4

459.GemsFDTD: basepeak = yes

465.tonto: -g -fast -xpagesize=4M -xipo=2 -lfast

### Benchmarks using both Fortran and C:

435.gromacs: -g -xprofile=collect:./feedback(pass 1)  
-xprofile=use:./feedback(pass 2) -fast(cc) -fast(f90)  
-xpagesize=4M -xipo=1 -xinline= -xarch=generic  
-xchip=generic -fsimple=0

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## Peak Optimization Flags (Continued)

436.cactusADM: -g -xprofile=collect:./feedback(pass 1)  
-xprofile=use:./feedback(pass 2) -fast(cc) -fast(f90)  
-xpagesize=4M -xipo=2 -fsimple=1 -xlinkopt=2

454.calculix: basepeak = yes

481.wrf: -g -xprofile=collect:./feedback(pass 1)  
-xprofile=use:./feedback(pass 2) -fast(cc) -fast(f90)  
-xpagesize=4M -xlinkopt=2

## Peak Other Flags

C benchmarks:  
-xjobs=16 -V

C++ benchmarks:  
-xjobs=16 -verbose=diags,version

Fortran benchmarks:  
-xjobs=16 -V

Benchmarks using both Fortran and C:  
-xjobs=16 -V

The flags file that was used to format this result can be browsed at  
<http://www.spec.org/cpu2006/flags/Sun-Solaris-Studio12.20090714.html>

You can also download the XML flags source by saving the following link:  
<http://www.spec.org/cpu2006/flags/Sun-Solaris-Studio12.20090714.xml>

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

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