



SPEC® CFP2006 Result

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Sun Microsystems Sun Fire X4200

SPECfp®_rate2006 = 38.1

SPECfp_rate_base2006 = 36.0

CPU2006 license: 6

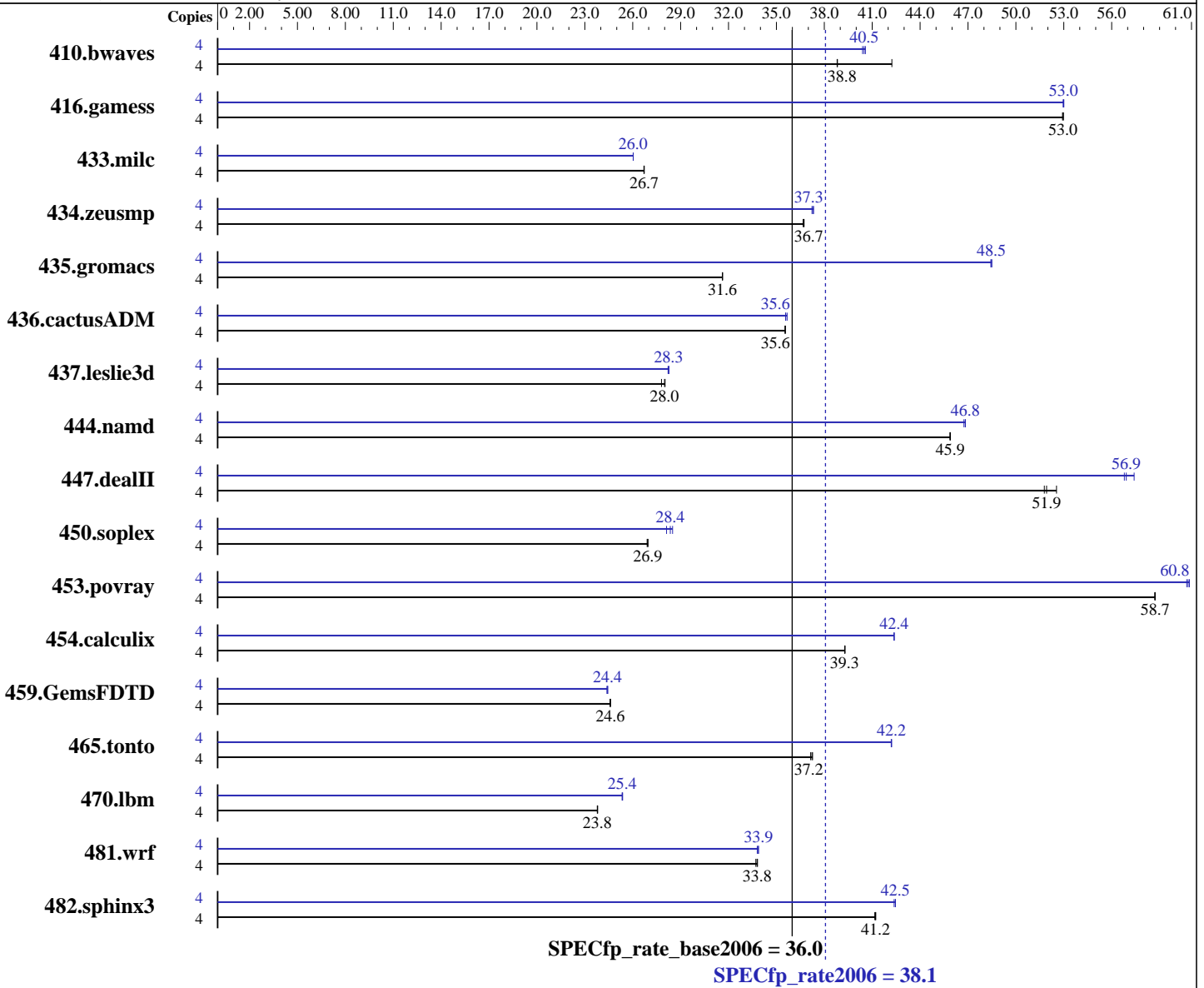
Test sponsor: Sun Microsystems

Tested by: Sun Microsystems

Test date: Apr-2006

Hardware Availability: Dec-2005

Software Availability: Jul-2006



Hardware

CPU Name: AMD Opteron 285
 CPU Characteristics:
 CPU MHz: 2600
 FPU: Integrated
 CPU(s) enabled: 4 cores, 2 chips, 2 cores/chip
 CPU(s) orderable: 1-2 chips
 Primary Cache: 64 KB I + 64 KB D on chip per core
 Secondary Cache: 1 MB I+D on chip per core

Continued on next page

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 | 4 | 1287 | 42.2 | <u>1400</u> | <u>38.8</u> | 1401 | 38.8 | 4 | 1346 | 40.4 | 1340 | 40.6 | <u>1342</u> | <u>40.5</u> |
| 416.gamess | 4 | 1478 | 53.0 | <u>1479</u> | <u>53.0</u> | 1480 | 52.9 | 4 | <u>1478</u> | <u>53.0</u> | 1478 | 53.0 | 1479 | 53.0 |
| 433.milc | 4 | 1375 | 26.7 | 1374 | 26.7 | <u>1375</u> | <u>26.7</u> | 4 | <u>1411</u> | <u>26.0</u> | 1410 | 26.0 | 1411 | 26.0 |
| 434.zeusmp | 4 | 991 | 36.7 | <u>991</u> | <u>36.7</u> | 993 | 36.7 | 4 | 978 | 37.2 | 975 | 37.3 | <u>976</u> | <u>37.3</u> |
| 435.gromacs | 4 | 903 | 31.6 | 903 | 31.6 | <u>903</u> | <u>31.6</u> | 4 | 590 | 48.4 | 589 | 48.5 | <u>589</u> | <u>48.5</u> |
| 436.cactusADM | 4 | 1345 | 35.5 | <u>1344</u> | <u>35.6</u> | 1344 | 35.6 | 4 | 1344 | 35.6 | 1340 | 35.7 | <u>1343</u> | <u>35.6</u> |
| 437.leslie3d | 4 | <u>1343</u> | <u>28.0</u> | 1352 | 27.8 | 1342 | 28.0 | 4 | 1333 | 28.2 | 1330 | 28.3 | <u>1331</u> | <u>28.3</u> |
| 444.namd | 4 | 699 | 45.9 | <u>699</u> | <u>45.9</u> | 699 | 45.9 | 4 | 686 | 46.7 | <u>685</u> | <u>46.8</u> | 685 | 46.8 |
| 447.dealII | 4 | 871 | 52.5 | 884 | 51.8 | <u>881</u> | <u>51.9</u> | 4 | 806 | 56.8 | <u>804</u> | <u>56.9</u> | 797 | 57.4 |
| 450.soplex | 4 | <u>1238</u> | <u>26.9</u> | 1238 | 27.0 | 1240 | 26.9 | 4 | 1186 | 28.1 | <u>1177</u> | <u>28.4</u> | 1171 | 28.5 |
| 453.povray | 4 | 362 | 58.7 | 363 | 58.7 | <u>362</u> | <u>58.7</u> | 4 | 351 | 60.7 | 350 | 60.9 | <u>350</u> | <u>60.8</u> |
| 454.calculix | 4 | 840 | 39.3 | 840 | 39.3 | <u>840</u> | <u>39.3</u> | 4 | 779 | 42.4 | <u>779</u> | <u>42.4</u> | 779 | 42.4 |
| 459.GemsFDTD | 4 | <u>1726</u> | <u>24.6</u> | 1724 | 24.6 | 1726 | 24.6 | 4 | 1737 | 24.4 | 1741 | 24.4 | <u>1738</u> | <u>24.4</u> |
| 465.tonto | 4 | 1060 | 37.1 | 1056 | 37.3 | <u>1057</u> | <u>37.2</u> | 4 | <u>933</u> | <u>42.2</u> | 932 | 42.2 | 933 | 42.2 |
| 470.lbm | 4 | 2311 | 23.8 | <u>2311</u> | <u>23.8</u> | 2309 | 23.8 | 4 | 2167 | 25.4 | <u>2168</u> | <u>25.4</u> | 2170 | 25.3 |
| 481.wrf | 4 | 1321 | 33.8 | <u>1322</u> | <u>33.8</u> | 1325 | 33.7 | 4 | 1319 | 33.9 | <u>1319</u> | <u>33.9</u> | 1322 | 33.8 |
| 482.sphinx3 | 4 | 1894 | 41.2 | 1891 | 41.2 | <u>1892</u> | <u>41.2</u> | 4 | 1840 | 42.4 | 1836 | 42.5 | <u>1837</u> | <u>42.5</u> |

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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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

Continued on next page



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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

Continued on next page



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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.

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