



# SPEC<sup>®</sup> CFP2006 Result

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## Sun Microsystems Sun Fire X2200 M2

SPECfp<sup>®</sup>\_rate2006 = 35.4

SPECfp\_rate\_base2006 = 33.6

CPU2006 license: 6

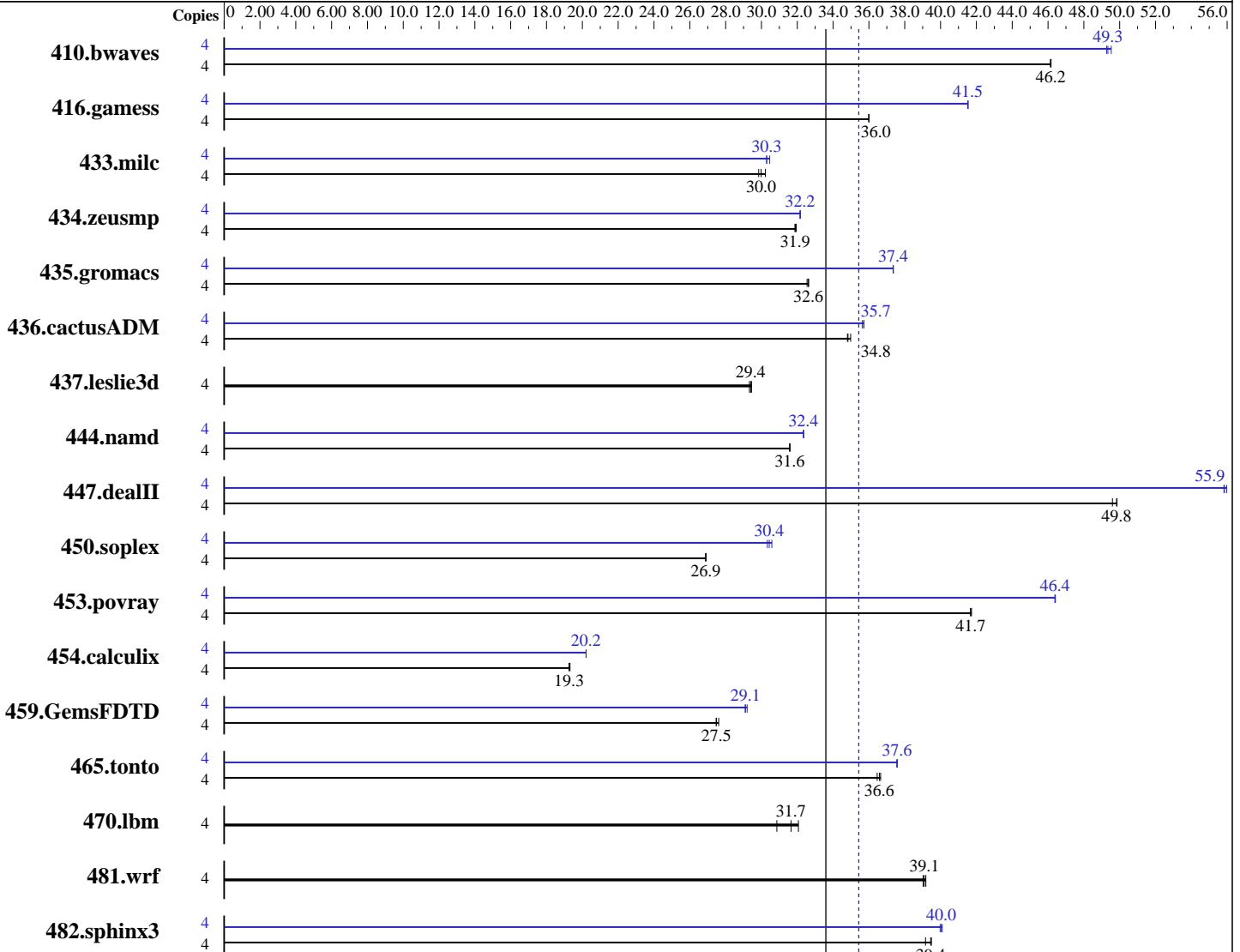
Test sponsor: Sun Microsystems

Tested by: Sun Microsystems

Test date: Apr-2007

Hardware Availability: Feb-2007

Software Availability: Aug-2006



SPECfp\_rate\_base2006 = 33.6

SPECfp\_rate2006 = 35.4

### Hardware

CPU Name: AMD Opteron 2210  
 CPU Characteristics: 1800  
 CPU MHz: Integrated  
 FPU: 4 cores, 2 chips, 2 cores/chip  
 CPU(s) enabled: 1,2 chips  
 CPU(s) orderable: 64 KB I + 64 KB D on chip per core  
 Primary Cache: 1 MB I+D on chip per core  
 Secondary Cache:

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### Software

Operating System: Red Hat Enterprise Linux AS release 4 Update 5  
 Compiler: QLogic PathScale Compiler Suite, Release 2.5  
 Auto Parallel: No  
 File System: ext3  
 System State: Multi-user, run level 3  
 Base Pointers: 64-bit

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L3 Cache: None  
Other Cache: None  
Memory: 16 GB (8x2GB, DDR2-667 CL5 ECC Reg Dual Rank)  
Disk Subsystem: SATA, 250 GB, 7200 RPM  
Other Hardware: None

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

## Results Table

Benchmark	Base							Peak						
	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
410.bwaves	4	<b>1178</b>	<b>46.2</b>	1177	46.2	1178	46.1	4	<b>1102</b>	<b>49.3</b>	1098	49.5	1103	49.3
416.gamess	4	<b>2176</b>	<b>36.0</b>	2176	36.0	2175	36.0	4	<b>1886</b>	<b>41.5</b>	1886	41.5	1886	41.5
433.milc	4	1230	29.8	<b>1225</b>	<b>30.0</b>	1215	30.2	4	1205	30.5	<b>1212</b>	<b>30.3</b>	1212	30.3
434.zeusmp	4	1140	31.9	<b>1142</b>	<b>31.9</b>	1142	31.9	4	<b>1132</b>	<b>32.2</b>	1132	32.2	1132	32.2
435.gromacs	4	878	32.5	<b>876</b>	<b>32.6</b>	875	32.6	4	764	37.4	765	37.3	<b>764</b>	<b>37.4</b>
436.cactusADM	4	1374	34.8	<b>1372</b>	<b>34.8</b>	1367	35.0	4	1338	35.7	<b>1339</b>	<b>35.7</b>	1342	35.6
437.leslie3d	4	1282	29.3	<b>1279</b>	<b>29.4</b>	1277	29.4	4	1282	29.3	<b>1279</b>	<b>29.4</b>	1277	29.4
444.namd	4	<b>1016</b>	<b>31.6</b>	1016	31.6	1016	31.6	4	992	32.3	<b>992</b>	<b>32.4</b>	992	32.4
447.dealII	4	918	49.9	923	49.6	<b>918</b>	<b>49.8</b>	4	820	55.8	817	56.0	<b>819</b>	<b>55.9</b>
450.soplex	4	1240	26.9	1241	26.9	<b>1240</b>	<b>26.9</b>	4	1091	30.6	1100	30.3	<b>1096</b>	<b>30.4</b>
453.povray	4	<b>511</b>	<b>41.7</b>	511	41.7	510	41.7	4	459	46.4	<b>459</b>	<b>46.4</b>	459	46.4
454.calculix	4	1709	19.3	1713	19.3	<b>1713</b>	<b>19.3</b>	4	<b>1633</b>	<b>20.2</b>	1633	20.2	1633	20.2
459.GemsFDTD	4	1545	27.5	<b>1544</b>	<b>27.5</b>	1537	27.6	4	<b>1458</b>	<b>29.1</b>	1453	29.2	1459	29.1
465.tonto	4	1080	36.5	1074	36.7	<b>1076</b>	<b>36.6</b>	4	<b>1048</b>	<b>37.6</b>	1048	37.6	1047	37.6
470.lbm	4	1781	30.9	<b>1736</b>	<b>31.7</b>	1714	32.1	4	1781	30.9	<b>1736</b>	<b>31.7</b>	1714	32.1
481.wrf	4	1145	39.0	1140	39.2	<b>1143</b>	<b>39.1</b>	4	1145	39.0	1140	39.2	<b>1143</b>	<b>39.1</b>
482.sphinx3	4	1991	39.2	1974	39.5	<b>1976</b>	<b>39.4</b>	4	<b>1947</b>	<b>40.0</b>	1944	40.1	1950	40.0

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

## General Notes

taskset utility used to bind CPU(s) to processes  
Default BIOS settings were used.

## Base Compiler Invocation

C benchmarks:  
pathcc

C++ benchmarks:  
pathCC

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## Base Compiler Invocation (Continued)

Fortran benchmarks:  
pathf95

Benchmarks using both Fortran and C:  
pathcc pathf95

## 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 -fno-second-underscore  
437.leslie3d: -DSPEC\_CPU\_LP64  
444.namd: -DSPEC\_CPU\_LP64  
447.dealII: -DSPEC\_CPU\_LP64 -DSPEC\_CPU\_TABLE\_WORKAROUND  
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\_LINUX -fno-second-underscore  
482.sphinx3: -DSPEC\_CPU\_LP64

## Base Optimization Flags

C benchmarks:  
-Ofast

C++ benchmarks:  
-Ofast

Fortran benchmarks:  
-Ofast

Benchmarks using both Fortran and C:  
-Ofast

## Base Other Flags

C benchmarks:  
-IPA:max\_jobs=4

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## Base Other Flags (Continued)

C++ benchmarks:  
-IPA:max\_jobs=4

Fortran benchmarks:  
-IPA:max\_jobs=4

Benchmarks using both Fortran and C:  
-IPA:max\_jobs=4

## Peak Compiler Invocation

C benchmarks:  
pathcc

C++ benchmarks:  
pathCC

Fortran benchmarks:  
pathf95

Benchmarks using both Fortran and C:  
pathcc pathf95

## 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  
436.cactusADM: -DSPEC\_CPU\_LP64 -fno-second-underscore  
437.leslie3d: -DSPEC\_CPU\_LP64  
444.namd: -DSPEC\_CPU\_LP64  
447.dealII: -DSPEC\_CPU\_TABLE\_WORKAROUND  
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\_LINUX -fno-second-underscore  
482.sphinx3: -DSPEC\_CPU\_LP64



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## Peak Optimization Flags

### C benchmarks:

433.milc: -fb\_create fbdata(pass 1) -fb\_opt fbdata(pass 2) -Ofast

470.lbm: basepeak = yes

482.sphinx3: Same as 433.milc

### C++ benchmarks:

444.namd: -fb\_create fbdata(pass 1) -fb\_opt fbdata(pass 2) -Ofast

447.dealIII: -Ofast -m32 -fno-exceptions

450.soplex: -fb\_create fbdata(pass 1) -fb\_opt fbdata(pass 2) -m32 -O3  
-OPT:IEEE\_arith=3 -CG:load\_exe=0 -CG:movnti=1  
-LNO:minvariant=off -fno-exceptions

453.povray: -fb\_create fbdata(pass 1) -fb\_opt fbdata(pass 2) -Ofast  
-fno-fast-math

### Fortran benchmarks:

410.bwaves: -fb\_create fbdata(pass 1) -fb\_opt fbdata(pass 2) -O3  
-OPT:Ofast -OPT:IEEE\_arith=3 -LNO:blocking=off  
-LNO:ignore\_feedback=off

416.gamess: -fb\_create fbdata(pass 1) -fb\_opt fbdata(pass 2) -O2  
-OPT:Ofast -OPT:ro=3 -OPT:unroll\_size=256

434.zeusmp: -Ofast -CG:local\_fwd\_sched=on -LNO:blocking=off  
-LNO:interchange=off -LNO:fu=10 -LNO:full\_unroll\_outer=on

437.leslie3d: basepeak = yes

459.GemsFDTD: -Ofast -LNO:fission=2 -LNO:prefetch=0

465.tonto: -Ofast -CG:local\_fwd\_sched=on -IPA:plimit=525

### Benchmarks using both Fortran and C:

435.gromacs: -O3 -OPT:rsqrt=2 -OPT:ro=3

436.cactusADM: -fb\_create fbdata(pass 1) -fb\_opt fbdata(pass 2) -O3  
-LNO:prefetch\_ahead=5 -LNO:ou\_prod\_max=10 -LNO:full\_unroll=5  
-ipa

454.calculix: -Ofast -CG:prefetch=off -LNO:simd=0 -OPT:unroll\_times\_max=8  
-WOPT:mem\_opnds=on

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## Peak Optimization Flags (Continued)

481.wrf: basepeak = yes

## Peak Other Flags

C benchmarks:

-IPA:max\_jobs=4

C++ benchmarks:

-IPA:max\_jobs=4

Fortran benchmarks:

-IPA:max\_jobs=4

Benchmarks using both Fortran and C:

-IPA:max\_jobs=4

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

[http://www.spec.org/cpu2006/flags/CPU2006\\_flags.20090714.30.html](http://www.spec.org/cpu2006/flags/CPU2006_flags.20090714.30.html)

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

[http://www.spec.org/cpu2006/flags/CPU2006\\_flags.20090714.30.xml](http://www.spec.org/cpu2006/flags/CPU2006_flags.20090714.30.xml)

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