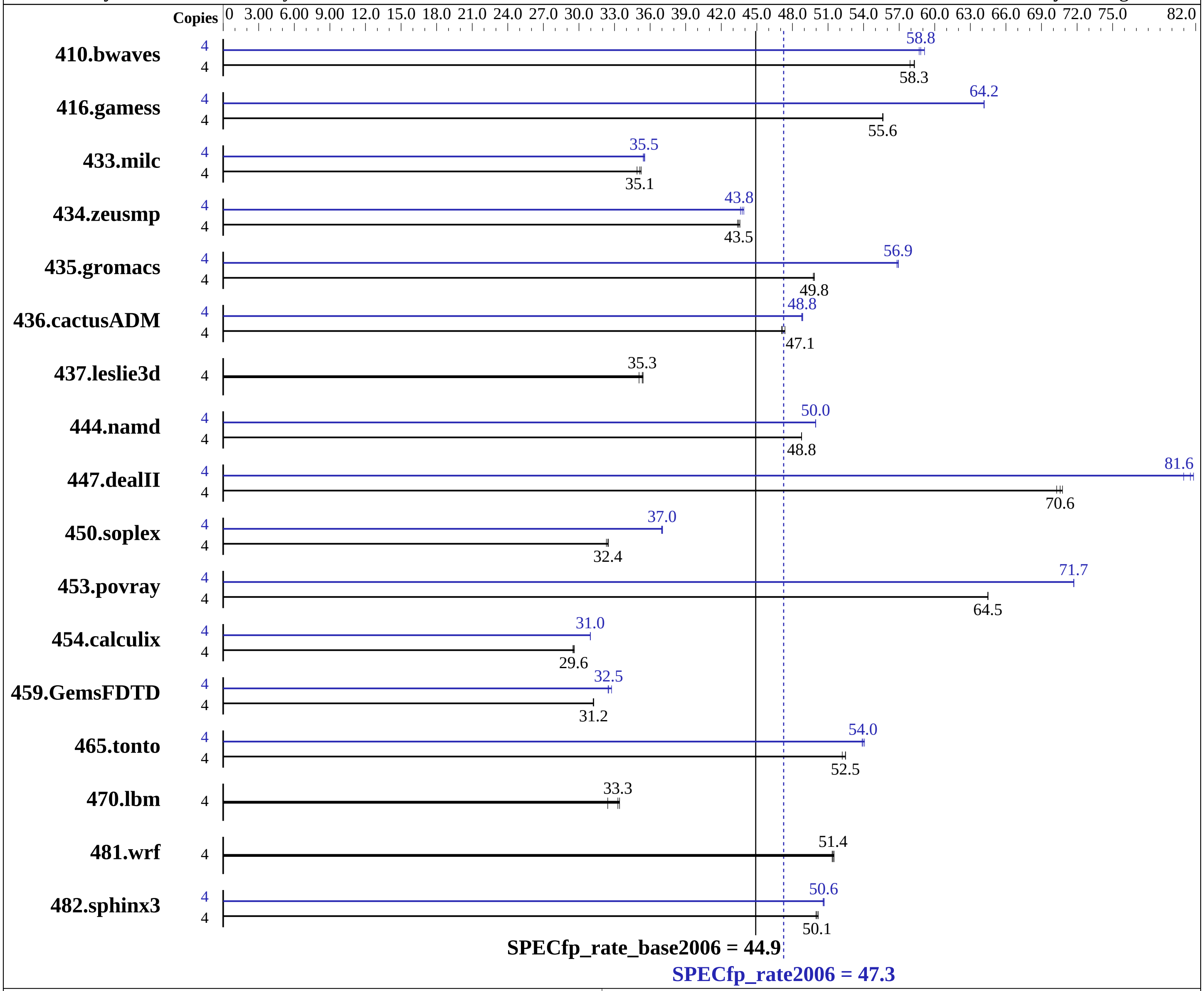
SPEC® CFP2006 Result

Sun Microsystems
Sun Fire X4100 M2

SPECfp®_rate2006 = 47.3

SPECfp_rate_base2006 = 44.9

CPU2006 license: 6		**Test date:**	Apr-2007
Test sponsor:	Sun Microsystems	**Hardware Availability:**	Oct-2006
Tested by:	Sun Microsystems	**Software Availability:**	Aug-2006



Hardware

CPU Name:	AMD Opteron 2220
CPU Characteristics:	
CPU MHz:	2800
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

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Software

Operating System:	RedHat 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 (8 x 2GB, DDR2-667 CL5 ECC Reg Dual Rank)
Disk Subsystem:	SAS, 72 GB,10K RPM
Other Hardware:	None

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

Results Table

	Base							Peak						
Benchmark	**Copies**	**Seconds**	**Ratio**	**Seconds**	**Ratio**	**Seconds**	**Ratio**	**Copies**	**Seconds**	**Ratio**	**Seconds**	**Ratio**	**Seconds**	**Ratio**
410.bwaves	4	**933**	**58.3**	932	58.3	939	57.9	4	926	58.7	919	59.1	**924**	**58.8**
416.gamess	4	**1408**	**55.6**	1409	55.6	1407	55.6	4	**1221**	**64.2**	1220	64.2	1221	64.1
433.milc	4	1052	34.9	**1045**	**35.1**	1042	35.2	4	**1035**	**35.5**	1037	35.4	1033	35.6
434.zeusmp	4	835	43.6	839	43.4	**837**	**43.5**	4	**832**	**43.8**	829	43.9	834	43.6
435.gromacs	4	574	49.8	**573**	**49.8**	573	49.9	4	**502**	**56.9**	503	56.8	502	56.9
436.cactusADM	4	1009	47.4	**1014**	**47.1**	1015	47.1	4	978	48.9	**979**	**48.8**	980	48.8
437.leslie3d	4	1072	35.1	1062	35.4	**1064**	**35.3**	4	1072	35.1	1062	35.4	**1064**	**35.3**
444.namd	4	658	48.8	**658**	**48.8**	658	48.8	4	**642**	**50.0**	642	50.0	642	50.0
447.dealII	4	**648**	**70.6**	651	70.3	647	70.8	4	**561**	**81.6**	559	81.8	565	81.0
450.soplex	4	**1028**	**32.4**	1027	32.5	1032	32.3	4	900	37.1	**901**	**37.0**	902	37.0
453.povray	4	330	64.5	330	64.5	**330**	**64.5**	4	**297**	**71.7**	297	71.7	297	71.7
454.calculix	4	1115	29.6	1119	29.5	**1117**	**29.6**	4	**1066**	**31.0**	1066	31.0	1066	31.0
459.GemsFDTD	4	1358	31.2	1360	31.2	**1358**	**31.2**	4	1308	32.5	**1306**	**32.5**	1296	32.8
465.tonto	4	754	52.2	**750**	**52.5**	750	52.5	4	728	54.1	**730**	**54.0**	731	53.9
470.lbm	4	1695	32.4	**1651**	**33.3**	1644	33.4	4	1695	32.4	**1651**	**33.3**	1644	33.4
481.wrf	4	867	51.5	870	51.3	**869**	**51.4**	4	867	51.5	870	51.3	**869**	**51.4**
482.sphinx3	4	**1557**	**50.1**	1553	50.2	1560	50.0	4	**1540**	**50.6**	1541	50.6	1538	50.7

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 was used.

This result was measured on the Sun Fire X4100 M2. In addition,
Sun has submitted the same result for the Sun Fire X4200 M2, which is
electronically equivalent to the Sun Fire X4100 M2.
```

Base Compiler Invocation

C benchmarks:
```
pathcc
```

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Base Compiler Invocation (Continued)

C++ benchmarks:
`pathCC`

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

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.dealII: -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

You can also download the XML flags source by saving the following link:
http://www.spec.org/cpu2006/flags/CPU2006_flags.20090714.30.xml

For questions about this result, please contact the tester.
For other inquiries, please contact webmaster@spec.org.

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