SPEC® CFP2006 Result

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Sun Microsystems

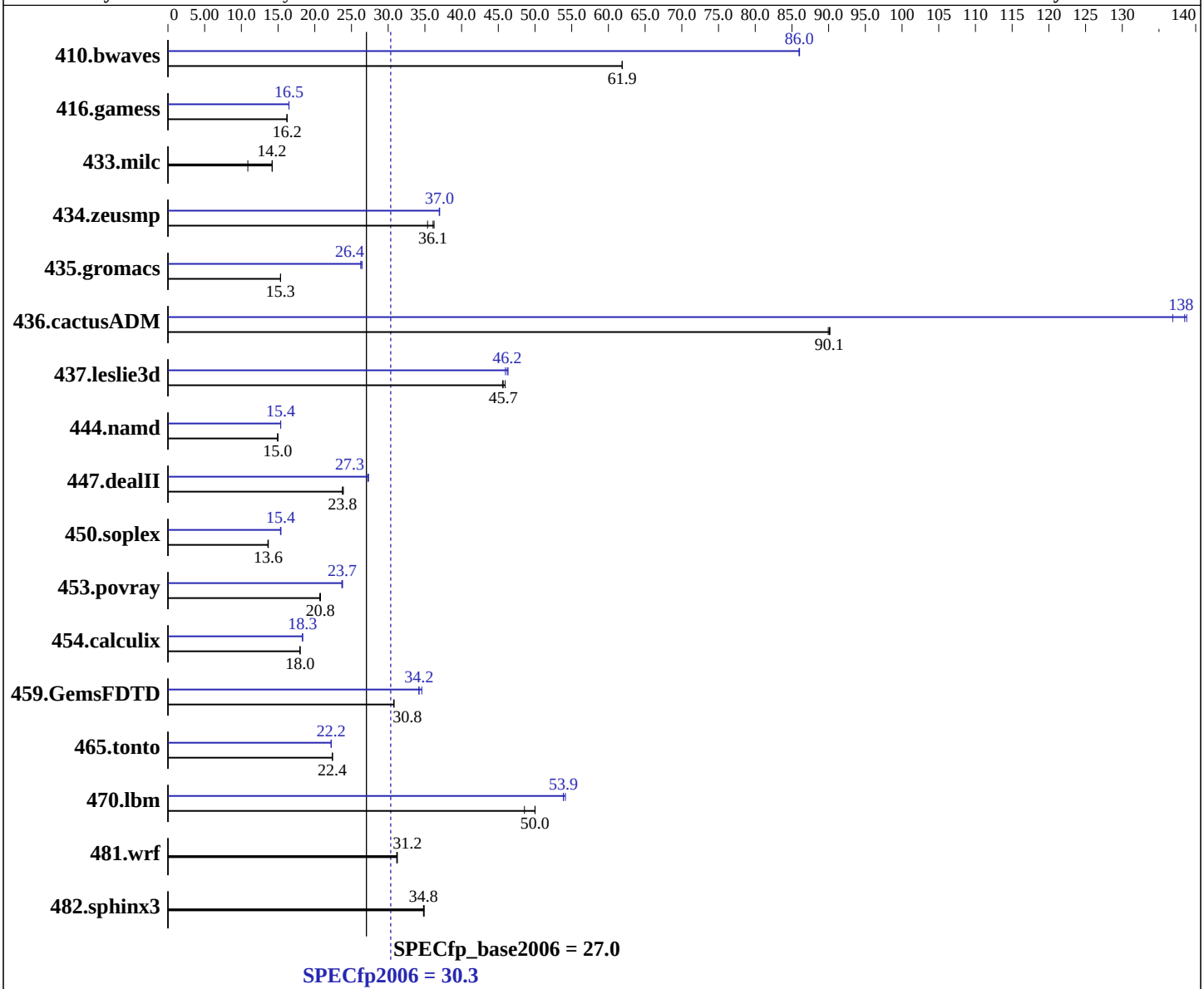
Sun Fire X6240 (AMD Opteron 2439 SE 2.8GHz)

SPECfp®2006 = 30.3

SPECfp_base2006 = 27.0

CPU2006 license: 6
Test sponsor: Sun Microsystems
Tested by: Sun Microsystems

Test date: Jan-2010
Hardware Availability: Nov-2009
Software Availability: Oct-2009



Hardware

CPU Name:	AMD Opteron 2439 SE
CPU Characteristics:	
CPU MHz:	2800
FPU:	Integrated
CPU(s) enabled:	12 cores, 2 chips, 6 cores/chip
CPU(s) orderable:	1 or 2 chips
Primary Cache:	64 KB I + 64 KB D on chip per core
Secondary Cache:	512 KB I+D on chip per core

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Software

Operating System:	Solaris 10 10/09
Compiler:	Sun Studio 12 Update 1
Auto Parallel:	Yes
File System:	zfs with gzip compression
System State:	Default
Base Pointers:	64-bit
Peak Pointers:	32/64-bit
Other Software:	none

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L3 Cache: 6 MB I+D on chip per chip
Other Cache: None
Memory: 32 GB (8x4GB, DDR2-667, CL5, Reg, Dual Rank)
Disk Subsystem: 1 x 146 GB SAS 10 K RPM
Other Hardware: None

Results Table

Benchmark	Base						Peak					
	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
410.bwaves	220	61.9	**220**	**61.9**	220	61.9	**158**	**86.0**	158	86.0	158	86.0
416.gamess	1207	16.2	**1207**	**16.2**	1207	16.2	1187	16.5	**1188**	**16.5**	1188	16.5
433.milc	646	14.2	**648**	**14.2**	844	10.9	646	14.2	**648**	**14.2**	844	10.9
434.zeusmp	**252**	**36.1**	251	36.3	257	35.4	246	37.0	246	37.0	**246**	**37.0**
435.gromacs	465	15.3	**466**	**15.3**	466	15.3	**270**	**26.4**	272	26.3	270	26.4
436.cactusADM	**133**	**90.1**	133	90.2	133	89.9	**86.3**	**138**	86.1	139	87.3	137
437.leslie3d	206	45.6	205	45.9	**206**	**45.7**	**203**	**46.2**	204	46.0	203	46.3
444.namd	**536**	**15.0**	536	15.0	537	14.9	**522**	**15.4**	522	15.4	523	15.3
447.dealII	**481**	**23.8**	479	23.9	481	23.8	**420**	**27.3**	420	27.2	419	27.3
450.soplex	**611**	**13.6**	610	13.7	613	13.6	542	15.4	**543**	**15.4**	544	15.3
453.povray	**256**	**20.8**	256	20.8	257	20.7	**224**	**23.7**	225	23.7	224	23.8
454.calculix	458	18.0	**458**	**18.0**	458	18.0	450	18.3	**450**	**18.3**	450	18.3
459.GemsFDTD	345	30.8	**345**	**30.8**	345	30.8	310	34.2	307	34.6	**310**	**34.2**
465.tonto	**439**	**22.4**	439	22.4	439	22.4	442	22.3	**443**	**22.2**	443	22.2
470.lbm	283	48.6	**275**	**50.0**	275	50.0	255	53.9	254	54.1	**255**	**53.9**
481.wrf	358	31.2	**358**	**31.2**	357	31.3	358	31.2	**358**	**31.2**	357	31.3
482.sphinx3	**560**	**34.8**	558	34.9	560	34.8	**560**	**34.8**	558	34.9	560	34.8

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

Compiler Invocation Notes

```
The Apache C++ Standard Library V4.2.1 was installed from
http://stdcxx.apache.org/download.html using:
    alias gmake=specmake
    gmake BUILDTYPE=8D CONFIG=sunpro.config
```

Operating System Notes

```
ulimit -s 131072  (shell): increases stack
export OMP_NUM_THREADS=6
export SUNW_MP_PROCBIND "0 2 4 6 8 10 1 3 5 7 9 11"
export SUNW_MP_THR_IDLE=SPIN

/etc/system parameters
   tune_t_fsflushr=10
```

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Operating System Notes (Continued)

```
autoup=900
set lpg_alloc_prefer=1
set zfs:zfs_arc_max = 0x10000000
```

Platform Notes

```
Default BIOS settings used except:
DCT Unganged Mode set to "Always" to enable Unganged Mode
```

General Notes

```
Environment variables set by runspec before the start of the run:
OMP_NUM_THREADS = "6"
SUNW_MP_PROCBIND = "0 2 4 6 8 10 1 3 5 7 9 11"
SUNW_MP_THR_IDLE = "SPIN"

447.dealII (peak): "apache_stdcxx_4_2_1" src.alt was used.

447.dealII (base): "apache_stdcxx_4_2_1" src.alt was 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

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Base Portability Flags (Continued)

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 -m64 -xvector=simd -xautopar

C++ benchmarks:
-fast -xipo=2 -m64 -xvector=simd -library=no%Cstd
-I/data1/stdcxx-4.2.1/include -I/data1/stdcxx-4.2.1/build/include
-L/data1/stdcxx-4.2.1/build/lib -R/data1/stdcxx-4.2.1/build/lib -lstd8D

Fortran benchmarks:
-fast -xipo=2 -m64 -xvector=simd -xautopar

Benchmarks using both Fortran and C:
-fast(cc) -xipo=2 -m64 -xvector=simd -xautopar -fast(f90)

Base Other Flags

C benchmarks:
-V -# -xjobs=12

C++ benchmarks:
-verbose=diags,version -xjobs=12

Fortran benchmarks:
-V -v -xjobs=12

Benchmarks using both Fortran and C:
-V -# -xjobs=12 -v

Peak Compiler Invocation

C benchmarks:
cc

C++ benchmarks:
CC

Fortran benchmarks:
f90

Benchmarks using both Fortran and C:
cc f90

Peak Portability Flags

433.milc: -DSPEC_CPU_LP64
436.cactusADM: -DSPEC_CPU_LP64
481.wrf: -DSPEC_CPU_LP64 -DSPEC_CPU_WORDS_LITTLEENDIAN
482.sphinx3: -DSPEC_CPU_LP64

Peak Optimization Flags

C benchmarks:

433.milc: basepeak = yes

470.lbm: -fast -xipo=2 -m64 -xvector=simd -xautopar
-Qoption iropt -Aparallel:nthreads=12 -xreduction
-L/data1/SmartHeap_9/lib -R/data1/SmartHeap_9/lib -lsmartheap_mt64
-lmvec

482.sphinx3: basepeak = yes

C++ benchmarks:

444.namd: -xprofile=collect:./feedback(pass 1)
-xprofile=use:./feedback(pass 2) -fast -xipo=2 -m64
-xpagesize=2M -xunroll=8 -library=stlport4

447.dealII: -fast -xipo=1 -m64 -xpagesize=2M -xalias_level=compatible
-xdepend -library=no%Cstd -I/data1/stdcxx-4.2.1/include
-I/data1/stdcxx-4.2.1/build/include
-L/data1/stdcxx-4.2.1/build/lib
-R/data1/stdcxx-4.2.1/build/lib -lstd8D

450.soplex: -fast -xipo=2 -xpagesize=2M -xrestrict
-xalias_level=simple -xprefetch=no%auto -library=stlport4
-xdepend

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Peak Optimization Flags (Continued)

453.povray: -xprofile=collect:./feedback(pass 1)
-xprofile=use:./feedback(pass 2) -fast -xipo=2 -m64
-xalias_level=simple -library=stlport4 -xpagesize=2M

Fortran benchmarks:

410.bwaves: -xprofile=collect:./feedback(pass 1)
-xprofile=use:./feedback(pass 2) -fast -xipo=2 -m64
-xpagesize=1G -xprefetch=no%auto -xautopar
-Qoption iropt -Aparallel:nthreads=12 -xreduction

416.gamess: -xprofile=collect:./feedback(pass 1)
-xprofile=use:./feedback(pass 2) -fast -xipo=2 -m64
-xpagesize=2M -xunroll=1 -qoption iropt -Ainline:cp=19
-qoption iropt -Ainline:rs=50 -qoption iropt -Ainline:irs=30

434.zeusmp: -fast -xipo=2 -m64 -xvector=simd -xautopar -xreduction

437.leslie3d: -xprofile=collect:./feedback(pass 1)
-xprofile=use:./feedback(pass 2) -fast -xipo=2 -m64
-xvector=simd -xautopar -xreduction -lumem

459.GemsFDTD: -xprofile=collect:./feedback(pass 1)
-xprofile=use:./feedback(pass 2) -fast -xipo=2 -m64
-xpagesize=2M -xvector=simd -xautopar
-Qoption iropt -Aparallel:nthreads=12 -xreduction

465.tonto: -fast -xipo=2 -m64 -xvector=lib -xalias -xdepend
-xpagesize=2M -xautopar -stackvar -xreduction
-xprefetch=no%auto

Benchmarks using both Fortran and C:

435.gromacs: -xprofile=collect:./feedback(pass 1)
-xprofile=use:./feedback(pass 2) -fast(cc) -fast(f90)
-xipo=2 -m64 -fsimple=2 -Qoption ube -fsimple=3
-xprefetch=no%auto -xpagesize=2M -xautopar -xreduction

436.cactusADM: -xprofile=collect:./feedback(pass 1)
-xprofile=use:./feedback(pass 2) -fast(cc) -fast(f90)
-xipo=2 -m64 -xvector=simd -xautopar
-W2,-Aparallel:nthreads=12
-Qoption iropt -Aparallel:nthreads=12

454.calculix: -fast(cc) -fast(f90) -xipo=2 -m64 -xpagesize=2M
-xvector=simd

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Peak Optimization Flags (Continued)

481.wrf: `basepeak = yes`

Peak Other Flags

C benchmarks:
```
-V -# -xjobs=12
```

C++ benchmarks:
```
-verbose=diags,version -xjobs=12
```

Fortran benchmarks:
```
-V -v -xjobs=12
```

Benchmarks using both Fortran and C:
```
-V -# -xjobs=12 -v
```

The flags file that was used to format this result can be browsed at
`http://www.spec.org/cpu2006/flags/Sun-OpenSolaris-Studio-x86_64.20090818.html`

You can also download the XML flags source by saving the following link:
`http://www.spec.org/cpu2006/flags/Sun-OpenSolaris-Studio-x86_64.20090818.xml`

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