SPEC® CFP2006 Result

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Sun Microsystems

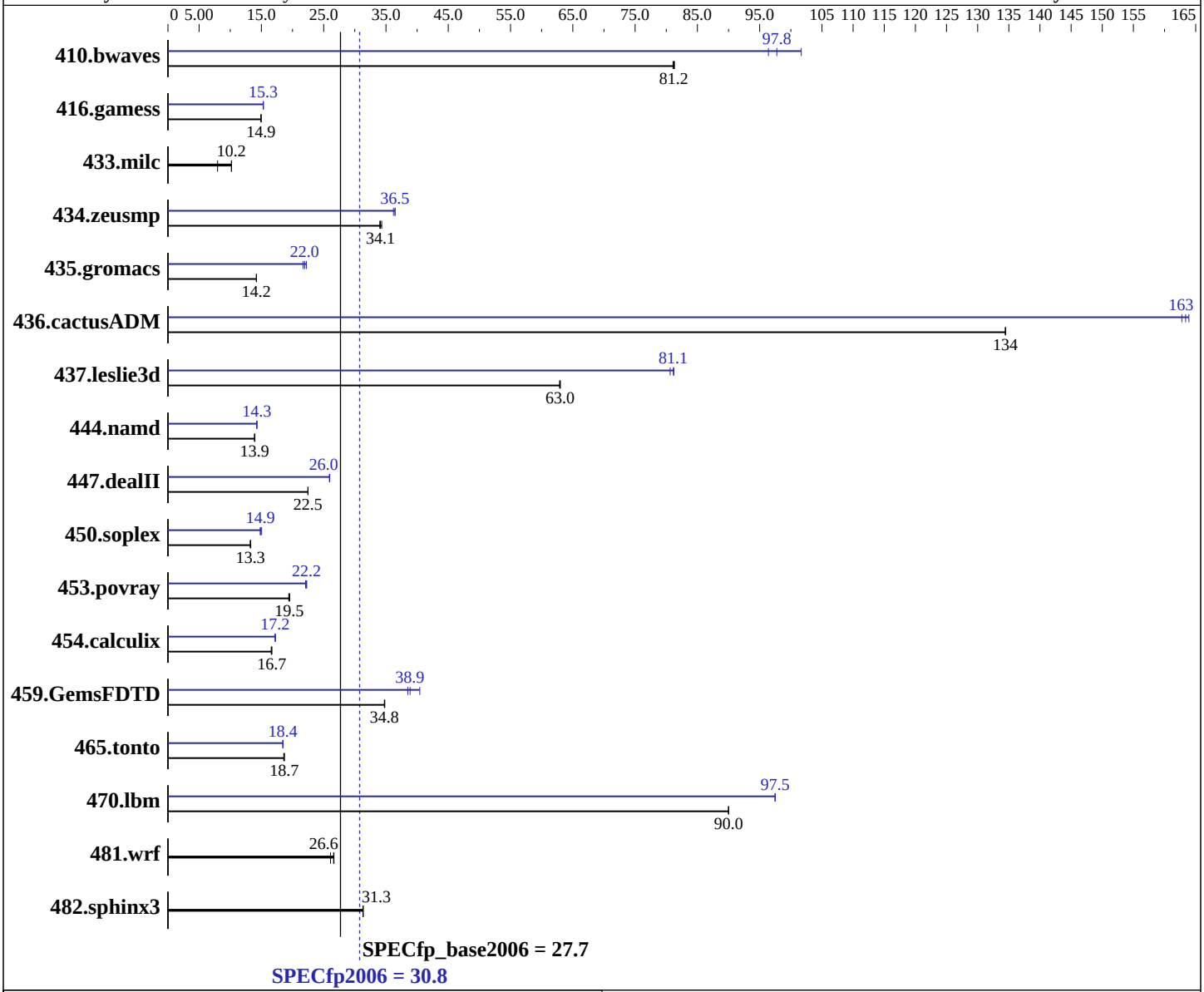
Sun Fire X6440 (AMD Opteron 8435 2.6GHz)

SPECfp®2006 = 30.8

SPECfp_base2006 = 27.7

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

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



Hardware

CPU Name:	AMD Opteron 8435
CPU Characteristics:	
CPU MHz:	2600
FPU:	Integrated
CPU(s) enabled:	24 cores, 4 chips, 6 cores/chip
CPU(s) orderable:	2 or 4 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:	OpenSolaris 2009.06
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: 64 GB (16x4GB, DDR2-667, CL5, Reg, Dual Rank)
Disk Subsystem: Compact Flash, 16 GB
Other Hardware: None

Results Table

Benchmark	Base						Peak					
	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
410.bwaves	168	81.1	**167**	**81.2**	167	81.3	**139**	**97.8**	134	102	141	96.4
416.gamess	1310	14.9	1311	14.9	**1310**	**14.9**	1278	15.3	1281	15.3	**1279**	**15.3**
433.milc	**901**	**10.2**	900	10.2	1152	7.97	**901**	**10.2**	900	10.2	1152	7.97
434.zeusmp	265	34.3	**267**	**34.1**	268	34.0	**250**	**36.5**	250	36.5	251	36.2
435.gromacs	**503**	**14.2**	503	14.2	503	14.2	**325**	**22.0**	321	22.2	329	21.7
436.cactusADM	88.8	135	**88.9**	**134**	88.9	134	73.4	163	72.9	164	**73.1**	**163**
437.leslie3d	149	63.0	150	62.9	**149**	**63.0**	**116**	**81.1**	116	81.2	117	80.6
444.namd	**577**	**13.9**	574	14.0	577	13.9	562	14.3	561	14.3	**562**	**14.3**
447.dealII	509	22.5	**509**	**22.5**	509	22.5	441	25.9	440	26.0	**441**	**26.0**
450.soplex	627	13.3	**629**	**13.3**	631	13.2	**561**	**14.9**	555	15.0	563	14.8
453.povray	272	19.6	**273**	**19.5**	274	19.4	239	22.3	241	22.1	**239**	**22.2**
454.calculix	**495**	**16.7**	495	16.7	498	16.6	479	17.2	478	17.2	**479**	**17.2**
459.GemsFDTD	**305**	**34.8**	305	34.8	305	34.7	**273**	**38.9**	276	38.5	262	40.4
465.tonto	529	18.6	527	18.7	**527**	**18.7**	533	18.4	532	18.5	**533**	**18.4**
470.lbm	153	90.0	153	90.0	**153**	**90.0**	141	97.5	141	97.4	**141**	**97.5**
481.wrf	428	26.1	**420**	**26.6**	419	26.7	428	26.1	**420**	**26.6**	419	26.7
482.sphinx3	622	31.3	622	31.3	**622**	**31.3**	622	31.3	622	31.3	**622**	**31.3**

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 unlimited  (shell): increases stack
export OMP_NUM_THREADS=12
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 = "12"
SUNW_MP_PROCBIND = "0 6 12 18 2 8 14 20 4 10 16 22 1 7 13 19 3 9 15 21 5 11 17 23"
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=24

C++ benchmarks:
-verbose=diags,version -xjobs=24

Fortran benchmarks:
-V -v -xjobs=24

Benchmarks using both Fortran and C:
-V -# -xjobs=24 -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=24 -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=2M -xprefetch=no%auto -xautopar -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
-Qoption iropt -Aparallel:nthreads=24 -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=24 -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=24
-Qoption iropt -Aparallel:nthreads=24

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=24
```

C++ benchmarks:
```
-verbose=diags,version -xjobs=24
```

Fortran benchmarks:
```
-V -v -xjobs=24
```

Benchmarks using both Fortran and C:
```
-V -# -xjobs=24 -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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