



SPEC[®] CFP2006 Result

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Sun Microsystems

SPECfp[®]2006 = 30.3

Sun Fire X6240 (AMD Opteron 2439 SE 2.8GHz)

SPECfp_base2006 = 27.0

CPU2006 license: 6

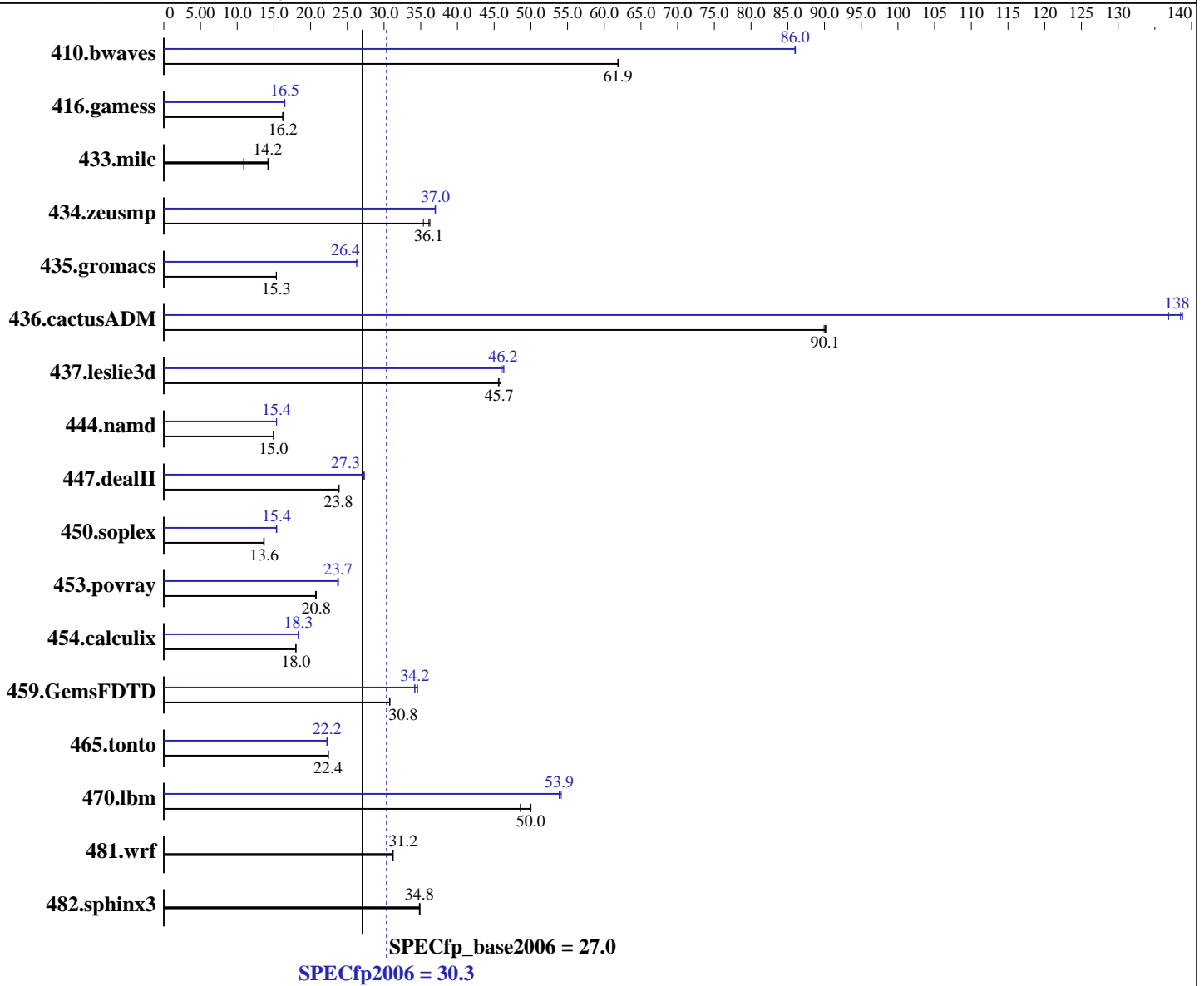
Test date: Jan-2010

Test sponsor: Sun Microsystems

Hardware Availability: Nov-2009

Tested by: Sun Microsystems

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	<u>220</u>	<u>61.9</u>	220	61.9	<u>158</u>	<u>86.0</u>	158	86.0	158	86.0
416.gamess	1207	16.2	<u>1207</u>	<u>16.2</u>	1207	16.2	1187	16.5	<u>1188</u>	<u>16.5</u>	1188	16.5
433.milc	646	14.2	<u>648</u>	<u>14.2</u>	844	10.9	646	14.2	<u>648</u>	<u>14.2</u>	844	10.9
434.zeusmp	<u>252</u>	<u>36.1</u>	251	36.3	257	35.4	246	37.0	246	37.0	<u>246</u>	<u>37.0</u>
435.gromacs	465	15.3	<u>466</u>	<u>15.3</u>	466	15.3	<u>270</u>	<u>26.4</u>	272	26.3	270	26.4
436.cactusADM	<u>133</u>	<u>90.1</u>	133	90.2	133	89.9	<u>86.3</u>	<u>138</u>	86.1	139	87.3	137
437.leslie3d	206	45.6	205	45.9	<u>206</u>	<u>45.7</u>	<u>203</u>	<u>46.2</u>	204	46.0	203	46.3
444.namd	<u>536</u>	<u>15.0</u>	536	15.0	537	14.9	<u>522</u>	<u>15.4</u>	522	15.4	523	15.3
447.dealII	<u>481</u>	<u>23.8</u>	479	23.9	481	23.8	<u>420</u>	<u>27.3</u>	420	27.2	419	27.3
450.soplex	<u>611</u>	<u>13.6</u>	610	13.7	613	13.6	542	15.4	<u>543</u>	<u>15.4</u>	544	15.3
453.povray	<u>256</u>	<u>20.8</u>	256	20.8	257	20.7	<u>224</u>	<u>23.7</u>	225	23.7	224	23.8
454.calculix	458	18.0	<u>458</u>	<u>18.0</u>	458	18.0	450	18.3	<u>450</u>	<u>18.3</u>	450	18.3
459.GemsFDTD	345	30.8	<u>345</u>	<u>30.8</u>	345	30.8	310	34.2	307	34.6	<u>310</u>	<u>34.2</u>
465.tonto	<u>439</u>	<u>22.4</u>	439	22.4	439	22.4	442	22.3	<u>443</u>	<u>22.2</u>	443	22.2
470.lbm	283	48.6	<u>275</u>	<u>50.0</u>	275	50.0	255	53.9	254	54.1	<u>255</u>	<u>53.9</u>
481.wrf	358	31.2	<u>358</u>	<u>31.2</u>	357	31.3	358	31.2	<u>358</u>	<u>31.2</u>	357	31.3
482.sphinx3	<u>560</u>	<u>34.8</u>	558	34.9	560	34.8	<u>560</u>	<u>34.8</u>	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_stdclx_4_2_1" src.alt was used.

447.dealII (base): "apache_stdclx_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.deall: -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



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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.dealIII: -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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