



# SPEC® CFP2006 Result

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## Sun Microsystems

SPECfp®2006 = 50.4

Sun Blade X6270 (Intel Xeon X5570 2.93GHz)

SPECfp\_base2006 = 45.0

CPU2006 license: 6

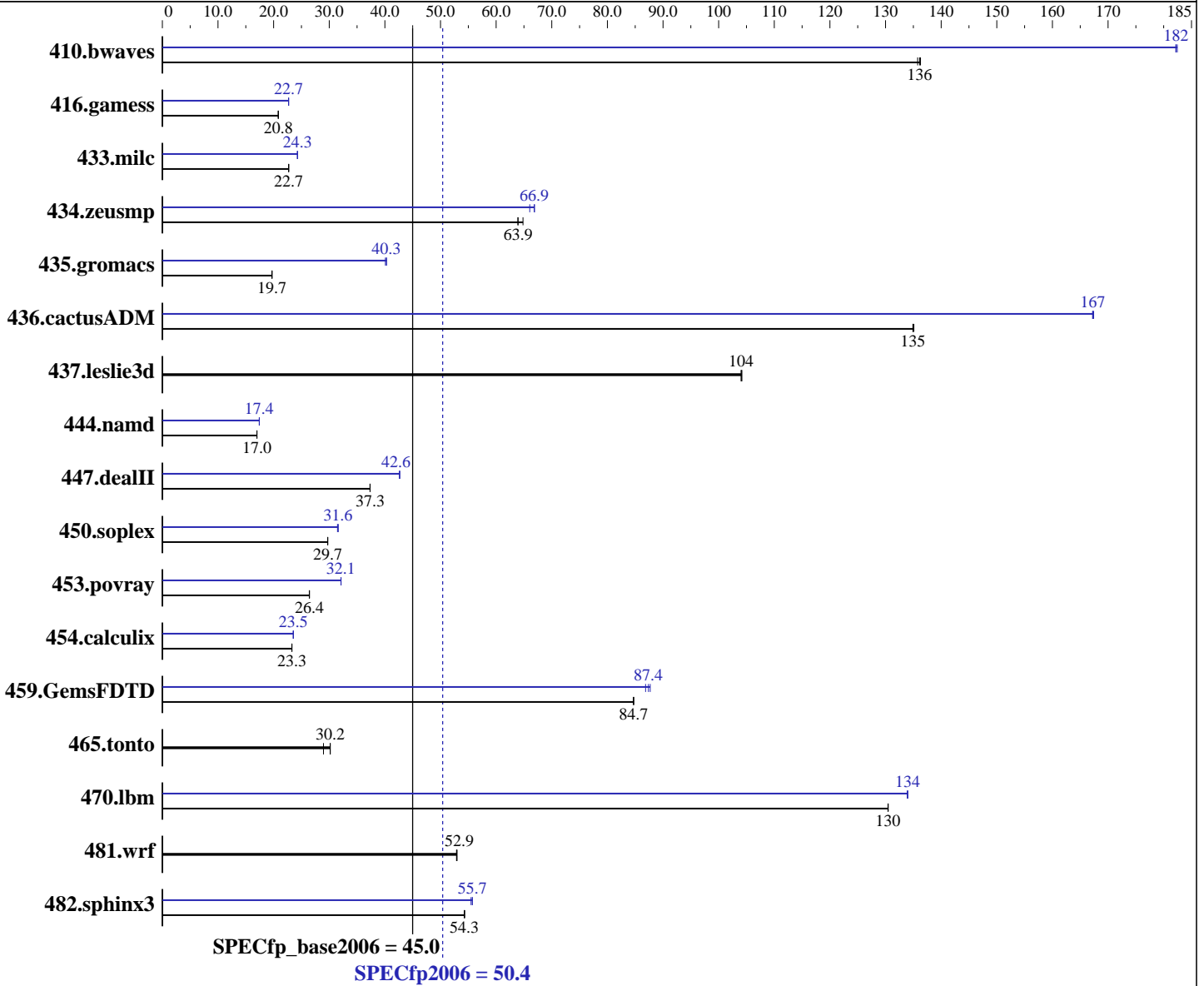
Test sponsor: Sun Microsystems

Tested by: Sun Microsystems

Test date: Mar-2009

Hardware Availability: Apr-2009

Software Availability: Jun-2009



### Hardware

CPU Name: Intel Xeon X5570  
 CPU Characteristics: Intel Turbo Boost Technology up to 3.33 GHz  
 CPU MHz: 2933  
 FPU: Integrated  
 CPU(s) enabled: 8 cores, 2 chips, 4 cores/chip, 2 threads/core  
 CPU(s) orderable: 1 or 2 chips  
 Primary Cache: 32 KB I + 32 KB D on chip per core  
 Secondary Cache: 256 KB I+D on chip per core

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### Software

Operating System: OpenSolaris 2008.11  
 Compiler: Sun Studio 12 Update 1 (nightly build 090328)  
 Auto Parallel: Yes  
 File System: zfs with gzip compression  
 System State: Default  
 Base Pointers: 64-bit  
 Peak Pointers: 32/64-bit

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L3 Cache: 8 MB I+D on chip per chip  
Other Cache: None  
Memory: 24 GB (6 x 4 GB DDR3-1333)  
Disk Subsystem: 134 GB using 1x ST914602SSUN146GSAS SAS 10 K RPM  
Other Hardware: None

Other Software: MicroQuill SmartHeap Library 9.01 for x64  
Apache C++ Standard Library V4.2.1

## Results Table

Benchmark	Base						Peak					
	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
410.bwaves	100	136	99.7	136	<b><u>99.8</u></b>	<b><u>136</u></b>	74.6	182	74.5	182	<b><u>74.6</u></b>	<b><u>182</u></b>
416.gamess	939	20.8	939	20.8	<b><u>939</u></b>	<b><u>20.8</u></b>	863	22.7	<b><u>863</u></b>	<b><u>22.7</u></b>	862	22.7
433.milc	404	22.7	404	22.7	<b><u>404</u></b>	<b><u>22.7</u></b>	<b><u>378</u></b>	<b><u>24.3</u></b>	378	24.3	378	24.3
434.zeusmp	<b><u>142</u></b>	<b><u>63.9</u></b>	142	63.9	140	64.8	136	66.9	<b><u>136</u></b>	<b><u>66.9</u></b>	138	66.0
435.gromacs	<b><u>362</u></b>	<b><u>19.7</u></b>	362	19.7	362	19.7	177	40.3	<b><u>177</u></b>	<b><u>40.3</u></b>	178	40.1
436.cactusADM	88.6	135	88.5	135	<b><u>88.6</u></b>	<b><u>135</u></b>	71.5	167	<b><u>71.5</u></b>	<b><u>167</u></b>	71.4	167
437.leslie3d	90.3	104	<b><u>90.3</u></b>	<b><u>104</u></b>	90.2	104	90.3	104	<b><u>90.3</u></b>	<b><u>104</u></b>	90.2	104
444.namd	472	17.0	472	17.0	<b><u>472</u></b>	<b><u>17.0</u></b>	460	17.4	460	17.4	<b><u>460</u></b>	<b><u>17.4</u></b>
447.dealII	<b><u>306</u></b>	<b><u>37.3</u></b>	306	37.3	307	37.3	<b><u>268</u></b>	<b><u>42.6</u></b>	268	42.6	268	42.7
450.soplex	280	29.7	<b><u>281</u></b>	<b><u>29.7</u></b>	281	29.7	<b><u>264</u></b>	<b><u>31.6</u></b>	264	31.6	265	31.5
453.povray	201	26.4	201	26.4	<b><u>201</u></b>	<b><u>26.4</u></b>	<b><u>166</u></b>	<b><u>32.1</u></b>	166	32.1	166	32.1
454.calculix	354	23.3	<b><u>354</u></b>	<b><u>23.3</u></b>	354	23.3	350	23.5	<b><u>350</u></b>	<b><u>23.5</u></b>	350	23.5
459.GemsFDTD	<b><u>125</u></b>	<b><u>84.7</u></b>	125	84.7	125	84.7	<b><u>121</u></b>	<b><u>87.4</u></b>	121	87.7	122	86.9
465.tonto	340	29.0	<b><u>326</u></b>	<b><u>30.2</u></b>	326	30.2	340	29.0	<b><u>326</u></b>	<b><u>30.2</u></b>	326	30.2
470.lbm	105	130	105	130	<b><u>105</u></b>	<b><u>130</u></b>	<b><u>103</u></b>	<b><u>134</u></b>	103	134	103	134
481.wrf	211	53.0	<b><u>211</u></b>	<b><u>52.9</u></b>	211	52.9	211	53.0	<b><u>211</u></b>	<b><u>52.9</u></b>	211	52.9
482.sphinx3	359	54.3	<b><u>359</u></b>	<b><u>54.3</u></b>	359	54.3	<b><u>350</u></b>	<b><u>55.7</u></b>	350	55.7	351	55.5

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

/etc/system parameters
tune_t_fsflushr=10
autoup=900
set lpg_alloc_prefer=1
```

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CPU2006 license: 6

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## Operating System Notes (Continued)

```
set zfs:zfs_arc_max = 0x10000000
```

## Platform Notes

```
AMIBIOS Build Date 1/26/09 ID 07.01.36.00
Default BIOS settings used except:
Intel VT-d: Disabled. VT-d, if enabled, supports
remapping of I/O DMA transfers for virtualization.
```

## General Notes

Environment variables set by runspec before the start of the run:

```
OMP_NUM_THREADS = "8"
SUNW_MP_PROCBIND = "true"
SUNW_MP_THR_IDLE = "SPIN"
```

447.dealII (peak): "apache\_stdccx\_4\_2\_1" src.alt was used.

447.dealII (base): "apache\_stdccx\_4\_2\_1" src.alt was used.

## Base Compiler Invocation

C benchmarks:

```
/data1/20090309_ceres_x86/bin/cc
```

C++ benchmarks:

```
/data1/20090309_ceres_x86/bin/CC
```

Fortran benchmarks:

```
/data1/20090309_ceres_x86/bin/f90
```

Benchmarks using both Fortran and C:

```
/data1/20090309_ceres_x86/bin/cc /data1/20090309_ceres_x86/bin/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=16

C++ benchmarks:

-verbose=diags,version -xjobs=16

Fortran benchmarks:

-V -v -xjobs=16

Benchmarks using both Fortran and C:

-V -# -xjobs=16 -v



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Test date: Mar-2009

Hardware Availability: Apr-2009

Software Availability: Jun-2009

## Peak Compiler Invocation

C benchmarks:

/data1/20090309\_ceres\_x86/bin/cc

C++ benchmarks:

/data1/20090309\_ceres\_x86/bin/CC

Fortran benchmarks:

/data1/20090309\_ceres\_x86/bin/f90

Benchmarks using both Fortran and C:

/data1/20090309\_ceres\_x86/bin/cc /data1/20090309\_ceres\_x86/bin/f90

## Peak Portability Flags

436.cactusADM: -DSPEC\_CPU\_LP64

437.leslie3d: -DSPEC\_CPU\_LP64

465.tonto: -DSPEC\_CPU\_LP64

481.wrf: -DSPEC\_CPU\_LP64 -DSPEC\_CPU\_WORDS\_LITTLEENDIAN

## Peak Optimization Flags

C benchmarks:

433.milc: -xprofile=collect:./feedback(pass 1)  
-xprofile=use:./feedback(pass 2) -fast -xipo=2  
-xpagesize=2M

470.lbm: -fast -xipo=2 -m64 -xvector=simd -xautopar -xreduction  
-L/data1/SmartHeap\_9/lib -R/data1/SmartHeap\_9/lib -lsmarheap\_mt64  
-lmvec

482.sphinx3: -fast -xipo=2 -m64 -xpagesize=2M -xvector=simd  
-xprefetch=no%auto -xautopar -xreduction

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

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## Peak Optimization Flags (Continued)

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

453.povray: -xprofile=collect:./feedback(pass 1)  
-xprofile=use:./feedback(pass 2) -fast -xipo=2 -m64  
-xpagesize=2M -xalias\_level=compatible -library=stlport4

### 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: basepeak = yes

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

465.tonto: basepeak = yes

### 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 -xpagesize=2M -fsimple=2  
-Qoption ube -fsimple=3 -xprefetch=no%auto -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=16  
-Qoption iropt -Aparallel:nthreads=16

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

481.wrf: basepeak = yes



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## Peak Other Flags

### C benchmarks:

-V -# -xjobs=16

### C++ benchmarks:

-verbose=diags,version -xjobs=16

### Fortran benchmarks:

-V -v -xjobs=16

### Benchmarks using both Fortran and C:

-V -# -xjobs=16 -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\\_64.20090710.00.html](http://www.spec.org/cpu2006/flags/Sun-OpenSolaris-Studio-x86_64.20090710.00.html)

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

[http://www.spec.org/cpu2006/flags/Sun-OpenSolaris-Studio-x86\\_64.20090710.00.xml](http://www.spec.org/cpu2006/flags/Sun-OpenSolaris-Studio-x86_64.20090710.00.xml)

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