



# SPEC® CFP2006 Result

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## Sun Microsystems

### SPECfp®\_rate2006 = 128

### Sun Blade X6450 (Intel Xeon E7450 2.4GHz)

### SPECfp\_rate\_base2006 = 117

CPU2006 license: 6

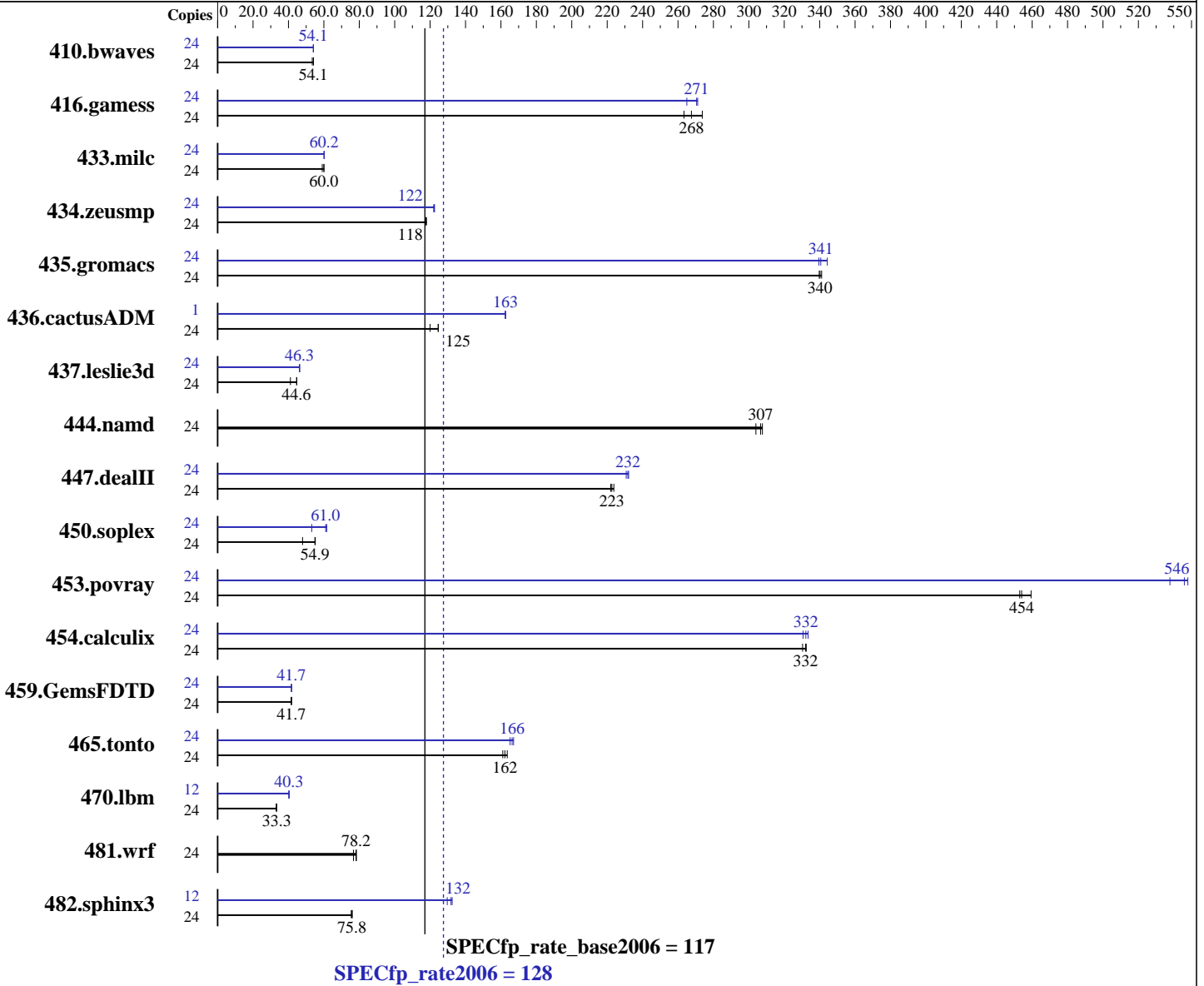
Test sponsor: Sun Microsystems

Tested by: Sun Microsystems

Test date: Sep-2008

Hardware Availability: Sep-2008

Software Availability: Nov-2008



#### Hardware

CPU Name: Intel Xeon E7450  
 CPU Characteristics:  
 CPU MHz: 2400  
 FPU: Integrated  
 CPU(s) enabled: 24 cores, 4 chips, 6 cores/chip  
 CPU(s) orderable: 2,4 chips  
 Primary Cache: 32 KB I + 32 KB D on chip per core  
 Secondary Cache: 9 MB I+D on chip per chip, 3 MB shared / 2 cores

Continued on next page

#### Software

Operating System: SUSE Linux Enterprise Server 10 (x86\_64) SP1, Kernel 2.6.16.46-0.12-smp  
 Compiler: Intel C++ and Fortran Compiler 11.0 for Linux Build 20080730 Package ID: l\_cproc\_b\_11.0.042, l\_fproc\_b\_11.0.042  
 Auto Parallel: Yes  
 File System: (See additional details below)  
 System State: Multi-user, run level 3  
 Base Pointers: 64-bit

Continued on next page



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L3 Cache: 12 MB I+D on chip per chip  
 Other Cache: None  
 Memory: 32 GB (16x2 GB PC2-5300F, 2 rank, CL5-5-5, ECC)  
 Disk Subsystem: Compact Flash, 16 GB for Linux  
 SAS, 72 GB,10 K RPM via NFS for SPEC CPU2006  
 Other Hardware: None

Peak Pointers: 32/64-bit  
 Other Software: Binutils 2.18.50.0.7.20080502

## Results Table

Benchmark	Base							Peak						
	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
410.bwaves	24	6103	53.4	6026	54.1	<b>6034</b>	<b>54.1</b>	24	6035	54.0	6030	54.1	<b>6032</b>	<b>54.1</b>
416.gamess	24	<b>1756</b>	<b>268</b>	1784	263	1717	274	24	1773	265	<b>1737</b>	<b>271</b>	1733	271
433.milc	24	3729	59.1	<b>3672</b>	<b>60.0</b>	3670	60.0	24	3666	60.1	<b>3662</b>	<b>60.2</b>	3662	60.2
434.zeusmp	24	1860	117	1852	118	<b>1857</b>	<b>118</b>	24	1789	122	<b>1787</b>	<b>122</b>	1783	123
435.gromacs	24	502	341	<b>504</b>	<b>340</b>	504	340	24	505	340	<b>503</b>	<b>341</b>	498	344
436.cactusADM	24	2391	120	<b>2303</b>	<b>125</b>	2302	125	1	73.5	163	73.6	162	<b>73.5</b>	<b>163</b>
437.leslie3d	24	5489	41.1	<b>5062</b>	<b>44.6</b>	5046	44.7	24	<b>4878</b>	<b>46.3</b>	4878	46.2	4875	46.3
444.namd	24	633	304	626	308	<b>628</b>	<b>307</b>	24	633	304	626	308	<b>628</b>	<b>307</b>
447.dealII	24	1237	222	1227	224	<b>1233</b>	<b>223</b>	24	<b>1185</b>	<b>232</b>	1190	231	1183	232
450.soplex	24	4173	48.0	<b>3645</b>	<b>54.9</b>	3629	55.2	24	3766	53.2	<b>3281</b>	<b>61.0</b>	3247	61.6
453.povray	24	<b>281</b>	<b>454</b>	278	459	282	453	24	237	538	<b>234</b>	<b>546</b>	233	548
454.calculix	24	596	332	<b>596</b>	<b>332</b>	599	330	24	<b>596</b>	<b>332</b>	594	333	599	331
459.GemsFDTD	24	6123	41.6	<b>6108</b>	<b>41.7</b>	6104	41.7	24	<b>6101</b>	<b>41.7</b>	6111	41.7	6099	41.8
465.tonto	24	1444	164	<b>1456</b>	<b>162</b>	1466	161	24	1430	165	<b>1420</b>	<b>166</b>	1413	167
470.lbm	24	9952	33.1	9903	33.3	<b>9904</b>	<b>33.3</b>	12	4097	40.2	4087	40.3	<b>4088</b>	<b>40.3</b>
481.wrf	24	3495	76.7	3421	78.4	<b>3429</b>	<b>78.2</b>	24	3495	76.7	3421	78.4	<b>3429</b>	<b>78.2</b>
482.sphinx3	24	6199	75.5	<b>6170</b>	<b>75.8</b>	6153	76.0	12	1804	130	1766	132	<b>1775</b>	<b>132</b>

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

## Submit Notes

The config file option 'submit' was used.  
 For peak modules using 1/2 the number of available cores, each copy was assigned to a single L2 cache using mysubmit.pl script.  
 See the flags description file for mysubmit.pl details.

## Operating System Notes

taskset was used to bind processes to cores except for 436.cactusADM peak  
 NFS for file system: Sun Fire X4440 with 1 x SAS,72 GB,10 K RPM  
 both client and server use onboard ethernet ports connected to a 10/100 Ethernet switch.

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## Operating System Notes (Continued)

'ulimit -s unlimited' was used to set the stacksize to unlimited  
OMP\_NUM\_THREADS set to number of cores.  
KMP\_STACKSIZE set to 64M  
KMP\_AFFINITY set to physical,0

## Platform Notes

Default BIOS configurations were used.

## General Notes

All benchmarks compiled in 64-bit mode except 437.leslie3d, 450.soplex and 482.sphinx3, at peak, are compiled in 32-bit mode

## Base Compiler Invocation

C benchmarks:

icc

C++ benchmarks:

icpc

Fortran benchmarks:

ifort

Benchmarks using both Fortran and C:

icc ifort

## 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 -nofor\_main  
436.cactusADM: -DSPEC\_CPU\_LP64 -nofor\_main  
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 -nofor\_main  
459.GemsFDTD: -DSPEC\_CPU\_LP64  
465.tonto: -DSPEC\_CPU\_LP64  
470.lbm: -DSPEC\_CPU\_LP64

Continued on next page



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## Base Portability Flags (Continued)

481.wrf: -DSPEC\_CPU\_LP64 -DSPEC\_CPU\_CASE\_FLAG -DSPEC\_CPU\_LINUX  
482.sphinx3: -DSPEC\_CPU\_LP64

## Base Optimization Flags

C benchmarks:

-xSSE4.1 -ipo -O3 -no-prec-div -static -opt-prefetch

C++ benchmarks:

-xSSE4.1 -ipo -O3 -no-prec-div -static -opt-prefetch

Fortran benchmarks:

-xSSE4.1 -ipo -O3 -no-prec-div -static -opt-prefetch

Benchmarks using both Fortran and C:

-xSSE4.1 -ipo -O3 -no-prec-div -static -opt-prefetch

## Peak Compiler Invocation

C benchmarks (except as noted below):

icc

482.sphinx3: /opt/intel/Compiler/11.0/042/bin/ia32/icc  
-L/opt/intel/Compiler/11.0/042/ipp/ia32/lib  
-I/opt/intel/Compiler/11.0/042/ipp/ia32/include

C++ benchmarks (except as noted below):

icpc

450.soplex: /opt/intel/Compiler/11.0/042/bin/ia32/icpc  
-L/opt/intel/Compiler/11.0/042/ipp/ia32/lib  
-I/opt/intel/Compiler/11.0/042/ipp/ia32/include

Fortran benchmarks (except as noted below):

ifort

437.leslie3d: /opt/intel/Compiler/11.0/042/bin/ia32/ifort  
-L/opt/intel/Compiler/11.0/042/ipp/ia32/lib  
-I/opt/intel/Compiler/11.0/042/ipp/ia32/include

Benchmarks using both Fortran and C:

icc ifort



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## 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 -nofor_main
436.cactusADM: -DSPEC_CPU_LP64 -nofor_main
444.namd: -DSPEC_CPU_LP64
447.dealII: -DSPEC_CPU_LP64
453.povray: -DSPEC_CPU_LP64
454.calculix: -DSPEC_CPU_LP64 -nofor_main
459.GemsFDTD: -DSPEC_CPU_LP64
465.tonto: -DSPEC_CPU_LP64
470.lbm: -DSPEC_CPU_LP64
481.wrf: -DSPEC_CPU_LP64 -DSPEC_CPU_CASE_FLAG -DSPEC_CPU_LINUX

```

## Peak Optimization Flags

C benchmarks:

```

433.milc: -prof-gen(pass 1) -prof-use(pass 2) -xSSE4.1 -ipo -O3
         -no-prec-div -static -fno-alias

```

```

470.lbm: -xSSE4.1 -ipo -O3 -no-prec-div -static -opt-prefetch
         -auto-ilp32

```

```

482.sphinx3: -xSSE4.1 -ipo -O3 -no-prec-div -static -unroll2

```

C++ benchmarks:

```

444.namd: basepeak = yes

```

```

447.dealII: -prof-gen(pass 1) -prof-use(pass 2) -xSSE4.1 -ipo -O3
           -no-prec-div -static -unroll2 -ansi-alias -scalar-rep-

```

```

450.soplex: -prof-gen(pass 1) -prof-use(pass 2) -xSSE4.1 -ipo -O3
           -no-prec-div -static -opt-malloc-options=3

```

```

453.povray: -prof-gen(pass 1) -prof-use(pass 2) -xSSE4.1 -ipo -O3
           -no-prec-div -static -unroll4 -ansi-alias

```

Fortran benchmarks:

```

410.bwaves: -xSSE4.1 -ipo -O3 -no-prec-div -static -opt-prefetch

```

```

416.gamess: -prof-gen(pass 1) -prof-use(pass 2) -xSSE4.1 -ipo -O3
           -no-prec-div -static -unroll2 -Ob0 -ansi-alias
           -scalar-rep-

```

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## Peak Optimization Flags (Continued)

434.zeusmp: -prof-gen(pass 1) -prof-use(pass 2) -xSSE4.1 -ipo -O3  
-no-prec-div -static

437.leslie3d: -prof-gen(pass 1) -prof-use(pass 2) -xSSE4.1 -ipo -O3  
-no-prec-div -static -opt-malloc-options=3 -opt-prefetch

459.GemsFDTD: -prof-gen(pass 1) -prof-use(pass 2) -xSSE4.1 -ipo -O3  
-no-prec-div -static -unroll2 -Ob0 -opt-prefetch

465.tonto: -prof-gen(pass 1) -prof-use(pass 2) -xSSE4.1 -ipo -O3  
-no-prec-div -static -unroll4 -auto

Benchmarks using both Fortran and C:

435.gromacs: -prof-gen(pass 1) -prof-use(pass 2) -xSSE4.1 -ipo -O3  
-no-prec-div -static -opt-prefetch -auto-ilp32

436.cactusADM: -prof-gen(pass 1) -prof-use(pass 2) -xSSE4.1 -ipo -O3  
-no-prec-div -static -unroll2 -opt-prefetch -parallel  
-auto-ilp32

454.calculix: -xSSE4.1 -ipo -O3 -no-prec-div -static -auto-ilp32

481.wrf: basepeak = yes

The flags file that was used to format this result can be browsed at

<http://www.spec.org/cpu2006/flags/Intel-ic11.0-fp-linux64-revA.20090713.10.html>

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

<http://www.spec.org/cpu2006/flags/Intel-ic11.0-fp-linux64-revA.20090713.10.xml>

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For other inquiries, please contact [webmaster@spec.org](mailto:webmaster@spec.org).

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