



# SPEC<sup>®</sup> CFP2006 Result

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## SGI

SGI Altix XE 320 (Intel Xeon E5472, 3.00 GHz)

SPECfp<sup>®</sup>2006 = 23.7

SPECfp\_base2006 = 20.2

CPU2006 license: 4

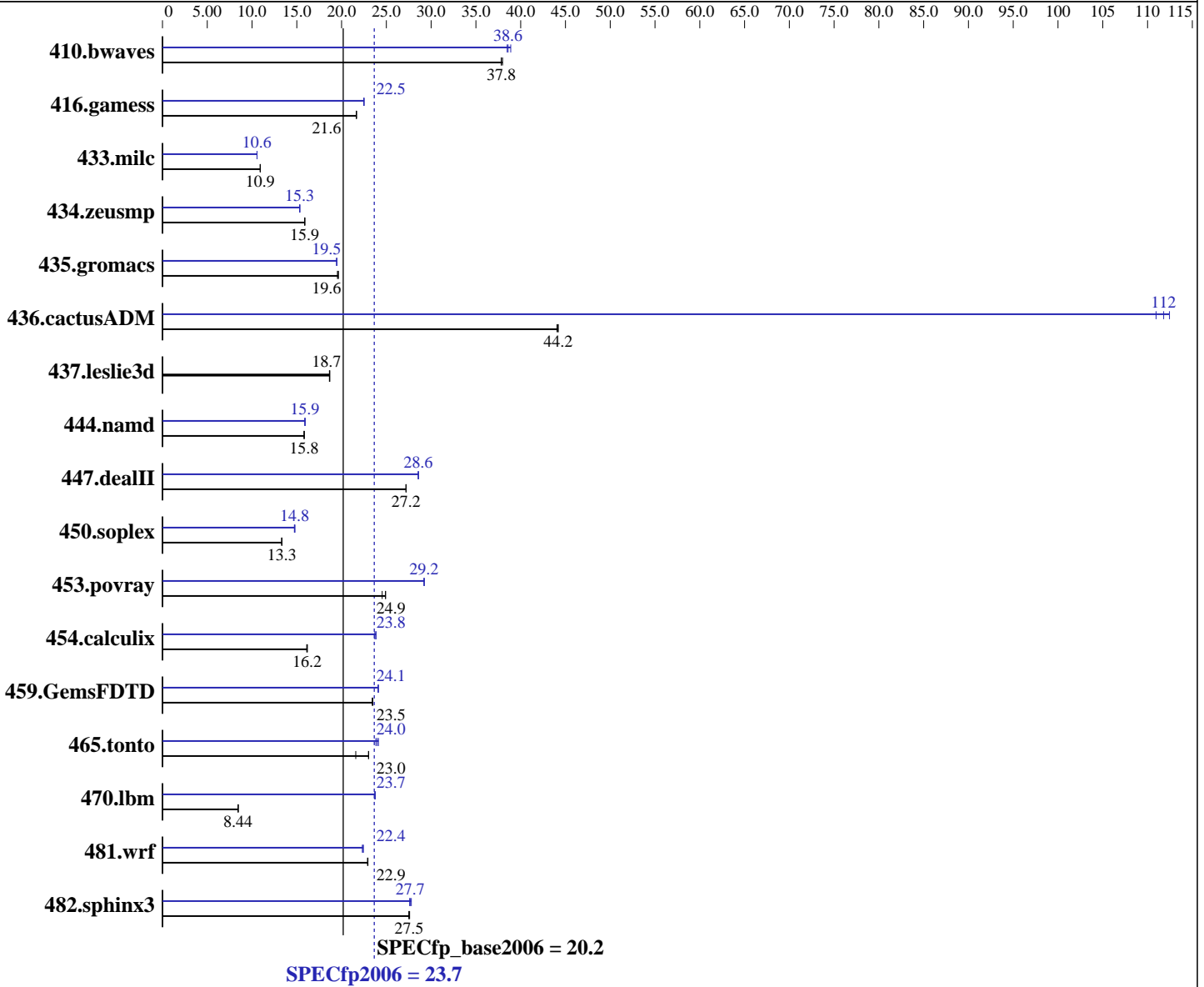
Test sponsor: SGI

Tested by: SGI

Test date: May-2008

Hardware Availability: Feb-2008

Software Availability: Apr-2008



### Hardware

CPU Name: Intel Xeon E5472  
 CPU Characteristics: Quad Core, 3.0 GHz  
 CPU MHz: 2992  
 FPU: Integrated  
 CPU(s) enabled: 8 cores, 2 chips, 4 cores/chip  
 CPU(s) orderable: 1,2 chips  
 Primary Cache: 32 KB I + 32 KB D on chip per core  
 Secondary Cache: 12 MB I+D on chip per chip, 6 MB shared / 2 cores

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### 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 for Linux  
 Version 10.1, Build 20070913  
 Auto Parallel: Yes  
 File System: xfs  
 System State: Multi-user, run level 3  
 Base Pointers: 64-bit  
 Peak Pointers: 32/64-bit

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L3 Cache: None  
Other Cache: None  
Memory: 16 GB (8\*2GB PC2-6400 CL5-5-5 FB-DIMMs)  
Disk Subsystem: 1 x 250 GB SATA (Hitachi Deskstar 7200rpm)  
Other Hardware: None

Other Software: SGI ProPack 5 for Linux Service Pack 5  
Binutils 2.17

## Results Table

Benchmark	Base						Peak					
	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
410.bwaves	<b>359</b>	<b>37.8</b>	359	37.8	358	38.0	349	38.9	<b>352</b>	<b>38.6</b>	353	38.5
416.gamess	903	21.7	<b>905</b>	<b>21.6</b>	905	21.6	871	22.5	<b>871</b>	<b>22.5</b>	869	22.5
433.milc	840	10.9	841	10.9	<b>841</b>	<b>10.9</b>	870	10.6	869	10.6	<b>869</b>	<b>10.6</b>
434.zeusmp	573	15.9	573	15.9	<b>573</b>	<b>15.9</b>	<b>594</b>	<b>15.3</b>	594	15.3	594	15.3
435.gromacs	365	19.5	<b>364</b>	<b>19.6</b>	364	19.6	367	19.5	<b>367</b>	<b>19.5</b>	367	19.5
436.cactusADM	271	44.0	270	44.2	<b>270</b>	<b>44.2</b>	<b>107</b>	<b>112</b>	106	112	108	111
437.leslie3d	<b>503</b>	<b>18.7</b>	504	18.6	503	18.7	<b>503</b>	<b>18.7</b>	504	18.6	503	18.7
444.namd	507	15.8	506	15.8	<b>507</b>	<b>15.8</b>	503	15.9	505	15.9	<b>504</b>	<b>15.9</b>
447.dealII	421	27.2	421	27.2	<b>421</b>	<b>27.2</b>	<b>400</b>	<b>28.6</b>	400	28.6	401	28.6
450.soplex	626	13.3	<b>626</b>	<b>13.3</b>	626	13.3	564	14.8	<b>565</b>	<b>14.8</b>	566	14.7
453.povray	<b>214</b>	<b>24.9</b>	217	24.5	214	24.9	182	29.2	182	29.2	<b>182</b>	<b>29.2</b>
454.calculix	512	16.1	510	16.2	<b>511</b>	<b>16.2</b>	348	23.7	346	23.8	<b>346</b>	<b>23.8</b>
459.GemsFDTD	<b>452</b>	<b>23.5</b>	453	23.4	452	23.5	440	24.1	<b>440</b>	<b>24.1</b>	440	24.1
465.tonto	427	23.0	<b>428</b>	<b>23.0</b>	456	21.6	<b>410</b>	<b>24.0</b>	408	24.1	413	23.8
470.lbm	1622	8.47	1629	8.44	<b>1627</b>	<b>8.44</b>	578	23.8	579	23.7	<b>579</b>	<b>23.7</b>
481.wrf	487	22.9	<b>487</b>	<b>22.9</b>	488	22.9	498	22.4	<b>498</b>	<b>22.4</b>	501	22.3
482.sphinx3	706	27.6	708	27.5	<b>708</b>	<b>27.5</b>	701	27.8	<b>705</b>	<b>27.7</b>	706	27.6

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

## General Notes

Bios settings:

Snoop Filter: Enabled

Hardware Prefetcher: Enabled

Adjacent Sector Prefetch: Disabled

All benchmarks compiled in 64-bit mode except 450.soplex, 470.lbm and 482.sphinx3, at peak, are compiled in 32-bit mode

Benchmarks compiled with automatic parallelization use the following environment settings:

OMP\_NUM\_THREADS = 8

KMP\_AFFINITY = physical,0

KMP\_STACKSIZE = 200M



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

## Base Optimization Flags

C benchmarks:

-fast -parallel

C++ benchmarks:

-fast -parallel

Fortran benchmarks:

-fast -parallel

Benchmarks using both Fortran and C:

-fast -parallel



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## Peak Compiler Invocation

C benchmarks (except as noted below):

```
/home/cmplr/usr3/alrahate/compilers/ic10.1mainline/20070824/Linux32/bin/icc
-L/home/cmplr/usr3/alrahate/compilers/ic10.1mainline/20070824/Linux32/lib
-I/home/cmplr/usr3/alrahate/compilers/ic10.1mainline/20070824/Linux32/include
```

433.milc: icc

C++ benchmarks (except as noted below):

icpc

```
450.soplex: /home/cmplr/usr3/alrahate/compilers/ic10.1mainline/20070824/Linux32/bin/icpc
-L/home/cmplr/usr3/alrahate/compilers/ic10.1mainline/20070824/Linux32/lib
-I/home/cmplr/usr3/alrahate/compilers/ic10.1mainline/20070824/Linux32/include
```

Fortran benchmarks:

ifort

Benchmarks using both Fortran and C:

icc ifort

## 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
437.leslie3d: -DSPEC_CPU_LP64
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
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) -fast -fno-alias  
-auto-ilp32

470.lbm: -prof-gen(pass 1) -prof-use(pass 2) -fast -unroll2  
-scalar-rep- -prefetch -opt-malloc-options=3

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## Peak Optimization Flags (Continued)

482.sphinx3: -fast -unroll2

### C++ benchmarks:

444.namd: -prof-gen(pass 1) -prof-use(pass 2) -fast -fno-alias  
-auto-ilp32

447.dealIII: -prof-gen(pass 1) -prof-use(pass 2) -fast -unroll2  
-ansi-alias -scalar-rep-

450.soplex: -prof-gen(pass 1) -prof-use(pass 2) -fast  
-opt-malloc-options=3

453.povray: -prof-gen(pass 1) -prof-use(pass 2) -fast -unroll4  
-ansi-alias

### Fortran benchmarks:

410.bwaves: -fast -prefetch -parallel

416.gamess: -prof-gen(pass 1) -prof-use(pass 2) -fast -unroll2 -Ob0  
-ansi-alias -scalar-rep-

434.zeusmp: -prof-gen(pass 1) -prof-use(pass 2) -fast

437.leslie3d: basepeak = yes

459.GemsFDTD: -prof-gen(pass 1) -prof-use(pass 2) -fast -unroll2 -Ob0  
-prefetch -parallel

465.tonto: -prof-gen(pass 1) -prof-use(pass 2) -fast -unroll4 -auto

### Benchmarks using both Fortran and C:

435.gromacs: -prof-gen(pass 1) -prof-use(pass 2) -fast -prefetch  
-auto-ilp32

436.cactusADM: -prof-gen(pass 1) -prof-use(pass 2) -fast -unroll2  
-prefetch -parallel -auto-ilp32

454.calculix: -fast -unroll-aggressive -auto-ilp32

481.wrf: -fast -parallel -prefetch -auto-ilp32

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

<http://www.spec.org/cpu2006/flags/Intel-ic10.1-FP-intel64-linux-flags.20090714.04.html>

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

<http://www.spec.org/cpu2006/flags/Intel-ic10.1-FP-intel64-linux-flags.20090714.04.xml>



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