



# SPEC<sup>®</sup> CFP2006 Result

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## SGI

SPECfp<sup>®</sup>2006 = **64.8**

SGI Altix ICE 8400EX (Intel Xeon X5690, 3.46GHz)

SPECfp\_base2006 = **61.9**

CPU2006 license: 4

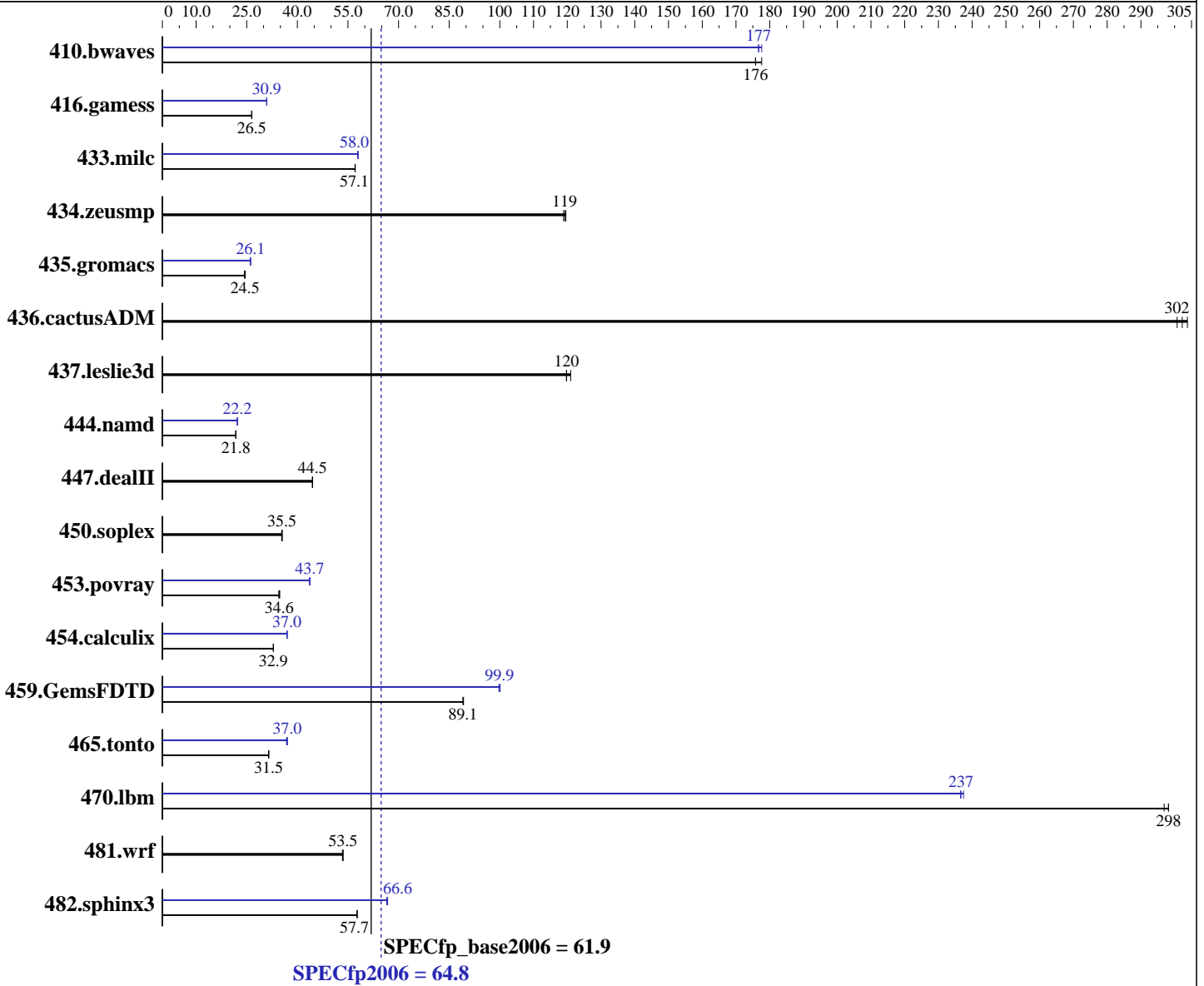
Test sponsor: SGI

Tested by: SGI

Test date: Jun-2011

Hardware Availability: Feb-2011

Software Availability: Jan-2011



### Hardware

CPU Name: Intel Xeon X5690  
 CPU Characteristics: Intel Turbo Boost Technology up to 3.73 GHz  
 CPU MHz: 3467  
 FPU: Integrated  
 CPU(s) enabled: 12 cores, 2 chips, 6 cores/chip, 2 threads/core  
 CPU(s) orderable: 1,2 chip  
 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: SUSE Linux Enterprise Server 11 (x86\_64) SP1, Kernel 2.6.32.13-0.4-default  
 Compiler: Intel C++ and Fortran Intel 64 Compiler XE for applications running on Intel 64 Version 12 Update 3  
 Auto Parallel: Yes  
 File System: NFSv3 IPoIB  
 System State: Run level 3 (multi-user)  
 Base Pointers: 64-bit

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L3 Cache: 12 MB I+D on chip per chip  
 Other Cache: None  
 Memory: 48 GB (12 x 4 GB 2Rx4 PC3-10600R-9, ECC)  
 Disk Subsystem: 8.8 TB RAID 5  
 60 x 146 GB SAS (Seagate Cheetah 15k.5)  
 Other Hardware: None

Peak Pointers: 32/64-bit  
 Other Software: None

## Results Table

Benchmark	Base						Peak					
	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
410.bwaves	76.5	178	77.3	176	<u>77.3</u>	<u>176</u>	<u>76.9</u>	<u>177</u>	76.9	177	76.5	178
416.gamess	740	26.5	738	26.5	<b>740</b>	<b>26.5</b>	633	30.9	632	31.0	<b>633</b>	<b>30.9</b>
433.milc	161	57.2	<b>161</b>	<b>57.1</b>	161	57.1	159	57.9	158	58.0	<b>158</b>	<b>58.0</b>
434.zeusmp	76.1	120	<b>76.3</b>	<b>119</b>	76.5	119	76.1	120	<b>76.3</b>	<b>119</b>	76.5	119
435.gromacs	291	24.5	<b>291</b>	<b>24.5</b>	293	24.3	273	26.1	<b>273</b>	<b>26.1</b>	273	26.2
436.cactusADM	39.3	304	<b>39.5</b>	<b>302</b>	39.7	301	39.3	304	<b>39.5</b>	<b>302</b>	39.7	301
437.leslie3d	<b>78.5</b>	<b>120</b>	78.5	120	77.7	121	<b>78.5</b>	<b>120</b>	78.5	120	77.7	121
444.namd	368	21.8	<b>368</b>	<b>21.8</b>	369	21.7	362	22.2	<b>361</b>	<b>22.2</b>	361	22.2
447.dealII	<b>257</b>	<b>44.5</b>	257	44.5	257	44.4	<b>257</b>	<b>44.5</b>	257	44.5	257	44.4
450.soplex	236	35.4	<b>235</b>	<b>35.5</b>	235	35.5	236	35.4	<b>235</b>	<b>35.5</b>	235	35.5
453.povray	<b>154</b>	<b>34.6</b>	153	34.8	154	34.5	122	43.6	<b>122</b>	<b>43.7</b>	122	43.7
454.calculix	251	32.9	<b>251</b>	<b>32.9</b>	251	32.9	223	37.0	<b>223</b>	<b>37.0</b>	223	37.0
459.GemsFDTD	119	89.3	119	89.1	<b>119</b>	<b>89.1</b>	<b>106</b>	<b>99.9</b>	106	100	106	99.7
465.tonto	312	31.5	<b>312</b>	<b>31.5</b>	313	31.5	265	37.1	267	36.8	<b>266</b>	<b>37.0</b>
470.lbm	46.3	297	46.1	298	<b>46.1</b>	<b>298</b>	58.1	237	57.9	237	<b>58.1</b>	<b>237</b>
481.wrf	<b>209</b>	<b>53.5</b>	209	53.6	209	53.4	<b>209</b>	<b>53.5</b>	209	53.6	209	53.4
482.sphinx3	338	57.7	<b>338</b>	<b>57.7</b>	338	57.7	<b>293</b>	<b>66.6</b>	292	66.8	293	66.5

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

## Operating System Notes

```
'ulimit -s unlimited' was used to set environment stack size
Set 900 in /proc/sys/vm/nr_hugepages
mount -t hugetlbfs nodev /tmp/hugepages
```

## General Notes

```
OMP_NUM_THREADS set to number of cores
KMP_AFFINITY set to granularity=fine,compact,1
KMP_STACKSIZE set to 200M
Binaries compiled on RHEL5.5
```



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## Base Compiler Invocation

C benchmarks:

icc -m64

C++ benchmarks:

icpc -m64

Fortran benchmarks:

ifort -m64

Benchmarks using both Fortran and C:

icc -m64 ifort -m64

## 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:

-xSSE4.2 -ipo -O3 -no-prec-div -static -parallel -opt-prefetch  
-ansi-alias

C++ benchmarks:

-xSSE4.2 -ipo -O3 -no-prec-div -static -opt-prefetch -ansi-alias

Fortran benchmarks:

-xSSE4.2 -ipo -O3 -no-prec-div -static -parallel -opt-prefetch

Benchmarks using both Fortran and C:

-xSSE4.2 -ipo -O3 -no-prec-div -static -parallel -opt-prefetch  
-ansi-alias



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## Peak Compiler Invocation

C benchmarks:

icc -m64

C++ benchmarks:

icpc -m64

Fortran benchmarks:

ifort -m64

Benchmarks using both Fortran and C:

icc -m64 ifort -m64

## Peak Portability Flags

Same as Base Portability Flags

## Peak Optimization Flags

C benchmarks:

433.milc: -xSSE4.2(pass 2) -prof-gen(pass 1) -ipo(pass 2) -O3(pass 2)  
-no-prec-div(pass 2) -prof-use(pass 2) -static -auto-ilp32  
-ansi-alias

470.lbm: -xSSE4.2(pass 2) -prof-gen(pass 1) -ipo(pass 2) -O3(pass 2)  
-no-prec-div(pass 2) -prof-use(pass 2) -parallel  
-ansi-alias -static -auto-ilp32

482.sphinx3: -xSSE4.2 -ipo -O3 -no-prec-div -unroll2 -ansi-alias  
-parallel

C++ benchmarks:

444.namd: -xSSE4.2(pass 2) -prof-gen(pass 1) -ipo(pass 2) -O3(pass 2)  
-no-prec-div(pass 2) -prof-use(pass 2) -fno-alias  
-auto-ilp32

447.dealII: basepeak = yes

450.soplex: basepeak = yes

453.povray: -xSSE4.2(pass 2) -prof-gen(pass 1) -ipo(pass 2) -O3(pass 2)  
-no-prec-div(pass 2) -prof-use(pass 2) -unroll4 -ansi-alias  
-B /usr/share/libhugetlbfs/ -Wl,-melf\_x86\_64 -Wl,-hugetlbfs-link=BDT

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## Peak Optimization Flags (Continued)

Fortran benchmarks:

410.bwaves: -xSSE4.2 -ipo -O3 -no-prec-div -opt-prefetch -parallel -static

416.gamess: -xSSE4.2(pass 2) -prof-gen(pass 1) -ipo(pass 2) -O3(pass 2) -no-prec-div(pass 2) -prof-use(pass 2) -unroll2 -inline-level=0 -scalar-rep- -static

434.zeusmp: basepeak = yes

437.leslie3d: basepeak = yes

459.GemsFDTD: -xSSE4.2(pass 2) -prof-gen(pass 1) -ipo(pass 2) -O3(pass 2) -no-prec-div(pass 2) -prof-use(pass 2) -unroll2 -inline-level=0 -opt-prefetch -parallel -B /usr/share/libhugetlbfs/ -Wl,-melf\_x86\_64 -Wl,-hugetlbfs-link=BDT

465.tonto: -xSSE4.2(pass 2) -prof-gen(pass 1) -ipo(pass 2) -O3(pass 2) -no-prec-div(pass 2) -prof-use(pass 2) -inline-calloc -opt-malloc-options=3 -auto -unroll4 -B /usr/share/libhugetlbfs/ -Wl,-melf\_x86\_64 -Wl,-hugetlbfs-link=BDT

Benchmarks using both Fortran and C:

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

436.cactusADM: basepeak = yes

454.calculix: -xSSE4.2 -ipo -O3 -no-prec-div -auto-ilp32 -ansi-alias

481.wrf: basepeak = yes

The flags files that were used to format this result can be browsed at

<http://www.spec.org/cpu2006/flags/Intel-ic12.0-linux64-revB.html>  
<http://www.spec.org/cpu2006/flags/platform.20110524.html>

You can also download the XML flags sources by saving the following links:

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