



# SPEC® CFP2006 Result

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## SGI

**SPECfp®2006 = 61.2**

SGI Altix ICE 8400EX (Intel Xeon X5680, 3.33GHz)

**SPECfp\_base2006 = 57.5**

CPU2006 license: 4

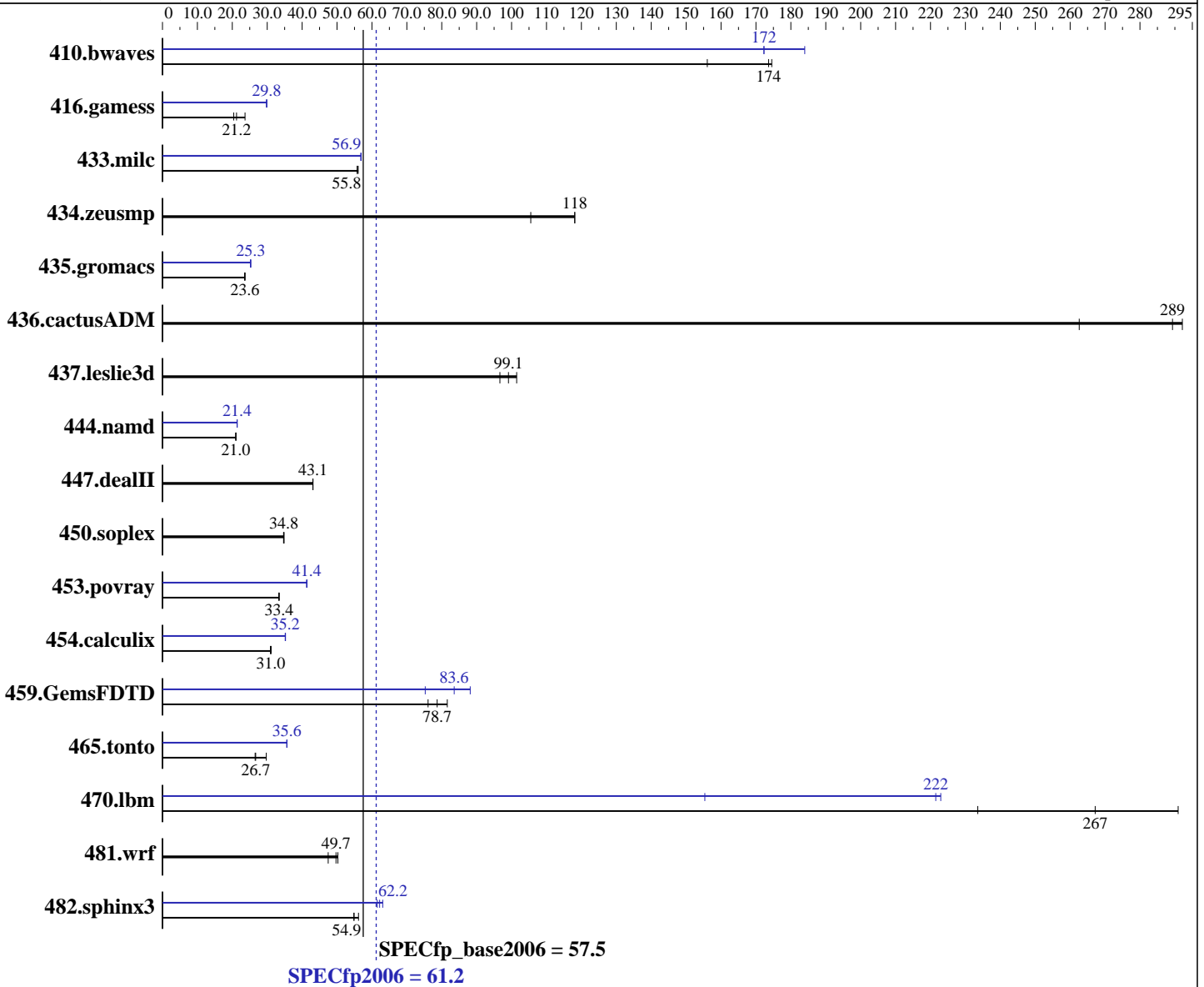
Test date: Jan-2011

Test sponsor: SGI

Hardware Availability: May-2010

Tested by: SGI

Software Availability: Apr-2011



### Hardware

CPU Name: Intel Xeon X5680  
 CPU Characteristics: Intel Turbo Boost Technology up to 3.60 GHz  
 CPU MHz: 3333  
 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 12.0 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	77.9	175	<b><u>78.3</u></b>	<b><u>174</u></b>	87.1	156	78.9	172	73.9	184	<b><u>78.9</u></b>	<b><u>172</u></b>
416.gamess	959	20.4	<b><u>923</u></b>	<b><u>21.2</u></b>	828	23.6	655	29.9	<b><u>656</u></b>	<b><u>29.8</u></b>	657	29.8
433.milc	165	55.8	<b><u>164</u></b>	<b><u>55.8</u></b>	164	56.1	<b><u>161</u></b>	<b><u>56.9</u></b>	161	56.9	162	56.8
434.zeusmp	77.1	118	86.3	106	<b><u>77.1</u></b>	<b><u>118</u></b>	77.1	118	86.3	106	<b><u>77.1</u></b>	<b><u>118</u></b>
435.gromacs	304	23.5	<b><u>302</u></b>	<b><u>23.6</u></b>	302	23.6	<b><u>283</u></b>	<b><u>25.3</u></b>	282	25.3	284	25.2
436.cactusADM	45.5	263	<b><u>41.3</u></b>	<b><u>289</u></b>	40.9	292	45.5	263	<b><u>41.3</u></b>	<b><u>289</u></b>	40.9	292
437.leslie3d	<b><u>94.8</u></b>	<b><u>99.1</u></b>	92.7	101	97.2	96.7	<b><u>94.8</u></b>	<b><u>99.1</u></b>	92.7	101	97.2	96.7
444.namd	<b><u>382</u></b>	<b><u>21.0</u></b>	382	21.0	381	21.0	375	21.4	375	21.4	<b><u>375</u></b>	<b><u>21.4</u></b>
447.dealII	<b><u>265</u></b>	<b><u>43.1</u></b>	266	43.1	265	43.1	<b><u>265</u></b>	<b><u>43.1</u></b>	266	43.1	265	43.1
450.soplex	240	34.7	<b><u>240</u></b>	<b><u>34.8</u></b>	240	34.8	240	34.7	<b><u>240</u></b>	<b><u>34.8</u></b>	240	34.8
453.povray	160	33.3	159	33.4	<b><u>159</u></b>	<b><u>33.4</u></b>	129	41.3	<b><u>129</u></b>	<b><u>41.4</u></b>	128	41.4
454.calculix	267	30.9	265	31.1	<b><u>266</u></b>	<b><u>31.0</u></b>	<b><u>234</u></b>	<b><u>35.2</u></b>	234	35.2	235	35.2
459.GemsFDTD	<b><u>135</u></b>	<b><u>78.7</u></b>	139	76.1	130	81.6	120	88.2	<b><u>127</u></b>	<b><u>83.6</u></b>	141	75.3
465.tonto	371	26.5	<b><u>369</u></b>	<b><u>26.7</u></b>	331	29.7	<b><u>276</u></b>	<b><u>35.6</u></b>	276	35.6	276	35.7
470.lbm	47.2	291	58.8	234	<b><u>51.4</u></b>	<b><u>267</u></b>	61.6	223	<b><u>62.0</u></b>	<b><u>222</u></b>	88.4	155
481.wrf	222	50.2	<b><u>225</u></b>	<b><u>49.7</u></b>	235	47.5	222	50.2	<b><u>225</u></b>	<b><u>49.7</u></b>	235	47.5
482.sphinx3	347	56.2	356	54.8	<b><u>355</u></b>	<b><u>54.9</u></b>	317	61.5	<b><u>313</u></b>	<b><u>62.2</u></b>	309	63.1

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 10800 in /proc/sys/vm/nr_hugepages
mount -t hugetlbfs nodev /tmp/hugepages
```

## General Notes

OMP\_NUM\_THREADS set to number of cores  
 Binaries compiled on RHEL5.5 with binutils-2.17.50.0.6-14.el5



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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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**Software Availability:** Apr-2011

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

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

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

<http://www.spec.org/cpu2006/flags/Intel-ic12.0-linux64-revA.xml>



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Tested with SPEC CPU2006 v1.1.  
Report generated on Wed Jul 23 16:51:35 2014 by SPEC CPU2006 PS/PDF formatter v6932.  
Originally published on 8 March 2011.