



# SPEC<sup>®</sup> CFP2006 Result

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## Oracle Corporation

SPECfp<sup>®</sup>2006 = **61.0**

Sun Fire X2270 M2 (Intel Xeon X5675 3.06 GHz)

SPECfp\_base2006 = **57.5**

CPU2006 license: 6

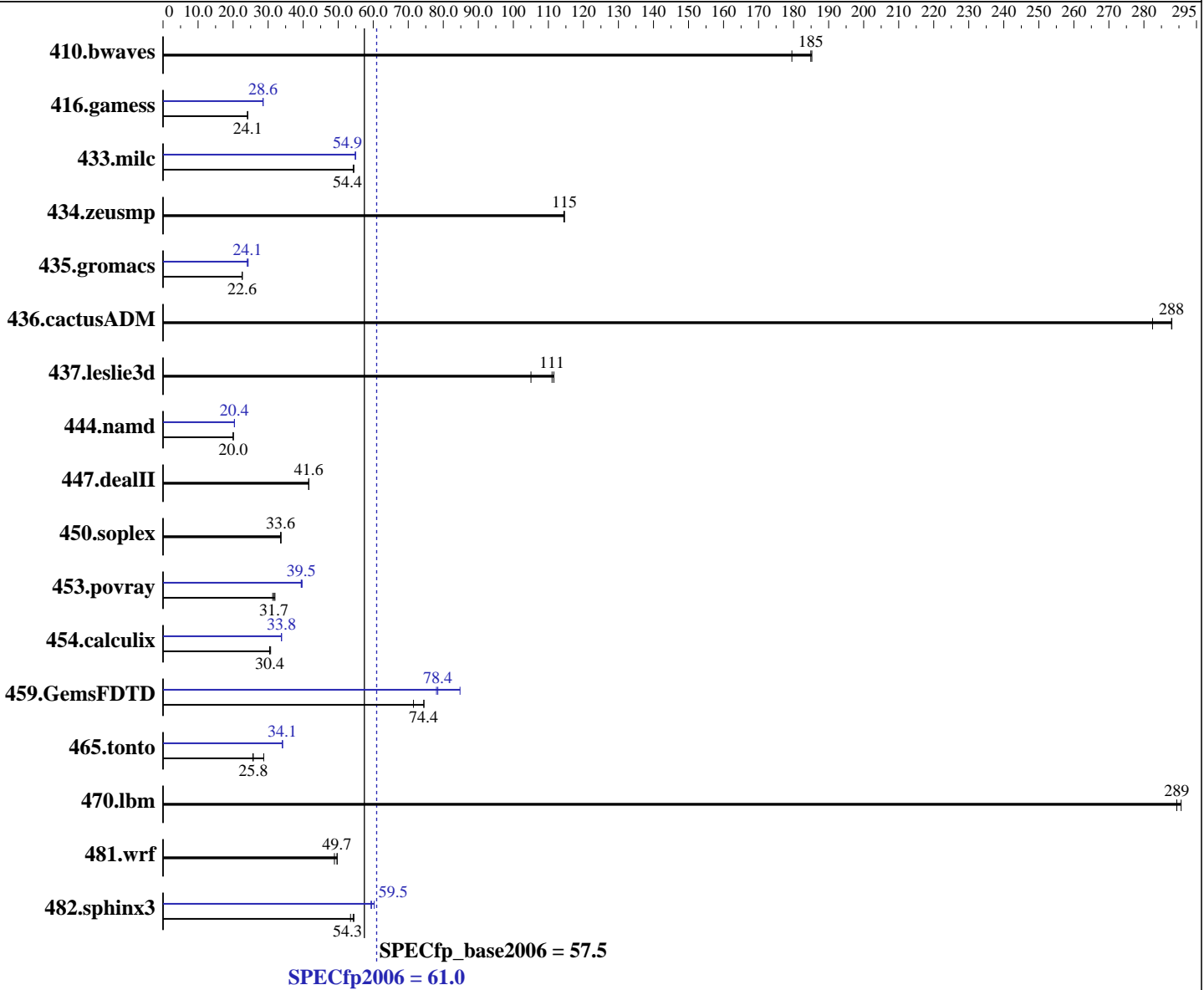
Test date: Feb-2011

Test sponsor: Oracle Corporation

Hardware Availability: Mar-2011

Tested by: Oracle Corporation

Software Availability: Nov-2010



### Hardware

CPU Name: Intel Xeon X5675  
 CPU Characteristics: Intel Turbo Boost Technology up to 3.46 GHz  
 CPU MHz: 3067  
 FPU: Integrated  
 CPU(s) enabled: 12 cores, 2 chips, 6 cores/chip, 2 threads/core  
 CPU(s) orderable: 1,2 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: Oracle Linux 5.5 kernel 2.6.18-194.el5  
 Compiler: Intel C++ and Fortran Intel 64 Compiler XE for applications running on Intel 64 Version 12 Alpha Build 20110105  
 Auto Parallel: Yes  
 File System: ext3  
 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: 1 x 1 TB, SATA, 7200 RPM  
Other Hardware: None

Peak Pointers: 64-bit  
Other Software: None

## Results Table

Benchmark	Base						Peak					
	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
410.bwaves	75.7	180	73.4	185	<b><u>73.5</u></b>	<b><u>185</u></b>	75.7	180	73.4	185	<b><u>73.5</u></b>	<b><u>185</u></b>
416.gamess	810	24.2	812	24.1	<b><u>811</u></b>	<b><u>24.1</u></b>	685	28.6	687	28.5	<b><u>685</u></b>	<b><u>28.6</u></b>
433.milc	<b><u>169</u></b>	<b><u>54.4</u></b>	169	54.5	169	54.3	167	54.9	<b><u>167</u></b>	<b><u>54.9</u></b>	167	55.0
434.zeusmp	79.4	115	79.5	114	<b><u>79.4</u></b>	<b><u>115</u></b>	79.4	115	79.5	114	<b><u>79.4</u></b>	<b><u>115</u></b>
435.gromacs	<b><u>316</u></b>	<b><u>22.6</u></b>	315	22.6	316	22.6	<b><u>296</u></b>	<b><u>24.1</u></b>	294	24.3	296	24.1
436.cactusADM	42.3	282	41.5	288	<b><u>41.5</u></b>	<b><u>288</u></b>	42.3	282	41.5	288	<b><u>41.5</u></b>	<b><u>288</u></b>
437.leslie3d	84.3	112	<b><u>84.6</u></b>	<b><u>111</u></b>	89.5	105	84.3	112	<b><u>84.6</u></b>	<b><u>111</u></b>	89.5	105
444.namd	<b><u>400</u></b>	<b><u>20.0</u></b>	400	20.1	400	20.0	394	20.4	<b><u>393</u></b>	<b><u>20.4</u></b>	393	20.4
447.dealII	275	41.6	<b><u>275</u></b>	<b><u>41.6</u></b>	275	41.6	275	41.6	<b><u>275</u></b>	<b><u>41.6</u></b>	275	41.6
450.soplex	248	33.7	<b><u>248</u></b>	<b><u>33.6</u></b>	248	33.6	248	33.7	<b><u>248</u></b>	<b><u>33.6</u></b>	248	33.6
453.povray	167	32.0	170	31.3	<b><u>168</u></b>	<b><u>31.7</u></b>	<b><u>135</u></b>	<b><u>39.5</u></b>	135	39.4	134	39.7
454.calculix	269	30.7	<b><u>271</u></b>	<b><u>30.4</u></b>	271	30.4	<b><u>244</u></b>	<b><u>33.8</u></b>	244	33.8	244	33.8
459.GemsFDTD	148	71.5	142	74.5	<b><u>143</u></b>	<b><u>74.4</u></b>	136	78.1	<b><u>135</u></b>	<b><u>78.4</u></b>	125	84.8
465.tonto	<b><u>382</u></b>	<b><u>25.8</u></b>	384	25.6	342	28.7	<b><u>289</u></b>	<b><u>34.1</u></b>	289	34.1	289	34.1
470.lbm	<b><u>47.5</u></b>	<b><u>289</u></b>	47.3	291	47.5	289	<b><u>47.5</u></b>	<b><u>289</u></b>	47.3	291	47.5	289
481.wrf	228	48.9	<b><u>225</u></b>	<b><u>49.7</u></b>	225	49.7	228	48.9	<b><u>225</u></b>	<b><u>49.7</u></b>	225	49.7
482.sphinx3	<b><u>359</u></b>	<b><u>54.3</u></b>	364	53.5	358	54.5	<b><u>327</u></b>	<b><u>59.5</u></b>	323	60.3	328	59.4

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 the stacksize to unlimited prior to run

## Platform Notes

Load Default BIOS Settings and then change the following  
Data Reuse Optimization Enabled  
Intel Hyperthreading Options Disabled

## General Notes

OMP\_NUM\_THREADS set to number of cores  
KMP\_AFFINITY set to granularity=fine,scatter  
KMP\_STACKSIZE set to 200M

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## General Notes (Continued)

Though binaries were linked with hugepages, this result did not use hugepages. Binaries were compiled on RHEL5.5 with Binutils binutils-2.17.50.0.6-14.el5

## 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

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## Base Optimization Flags (Continued)

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

## 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: basepeak = yes

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

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## Peak Optimization Flags (Continued)

447.dealll: 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

### Fortran benchmarks:

410.bwaves: basepeak = yes

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-revA.html>  
[http://www.spec.org/cpu2006/flags/Oracle-platform-x86\\_64.20101027.html](http://www.spec.org/cpu2006/flags/Oracle-platform-x86_64.20101027.html)

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

<http://www.spec.org/cpu2006/flags/Intel-ic12.0-linux64-revA.xml>  
[http://www.spec.org/cpu2006/flags/Oracle-platform-x86\\_64.20101027.xml](http://www.spec.org/cpu2006/flags/Oracle-platform-x86_64.20101027.xml)



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