



# SPEC<sup>®</sup> CFP2006 Result

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## Oracle Corporation

SPECfp<sup>®</sup>\_rate2006 = 273

Sun Fire X4270 M2 (Intel Xeon X5690 3.47 GHz)

SPECfp\_rate\_base2006 = 265

CPU2006 license: 6

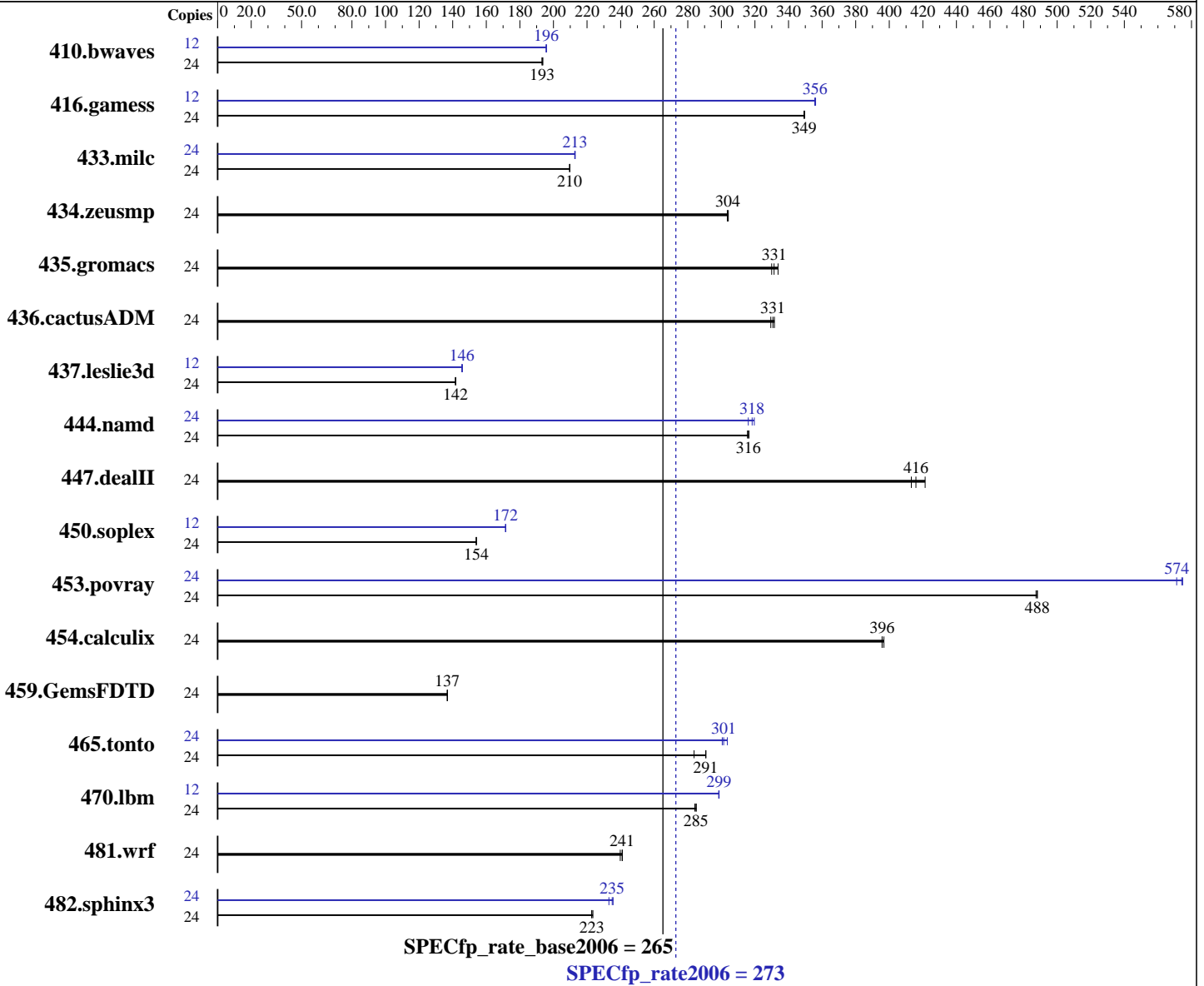
Test sponsor: Oracle Corporation

Tested by: Oracle Corporation

Test date: Feb-2011

Hardware Availability: Mar-2011

Software Availability: Nov-2010



### 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 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 12.0.1.116 Build 20101116  
 Auto Parallel: No  
 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 300 GB 10000 RPM SAS2  
Other Hardware: None

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

## Results Table

Benchmark	Base							Peak						
	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
410.bwaves	24	1684	194	<b>1687</b>	<b>193</b>	1689	193	12	<b>833</b>	<b>196</b>	833	196	834	196
416.gamess	24	1344	350	1346	349	<b>1345</b>	<b>349</b>	12	661	356	<b>660</b>	<b>356</b>	660	356
433.milc	24	1050	210	1051	210	<b>1051</b>	<b>210</b>	24	1034	213	<b>1036</b>	<b>213</b>	1036	213
434.zeusmp	24	<b>719</b>	<b>304</b>	720	304	718	304	24	<b>719</b>	<b>304</b>	720	304	718	304
435.gromacs	24	519	330	513	334	<b>517</b>	<b>331</b>	24	519	330	513	334	<b>517</b>	<b>331</b>
436.cactusADM	24	<b>867</b>	<b>331</b>	871	329	865	332	24	<b>867</b>	<b>331</b>	871	329	865	332
437.leslie3d	24	1593	142	1591	142	<b>1592</b>	<b>142</b>	12	774	146	775	145	<b>775</b>	<b>146</b>
444.namd	24	608	316	610	316	<b>609</b>	<b>316</b>	24	609	316	602	320	<b>605</b>	<b>318</b>
447.dealII	24	665	413	652	421	<b>660</b>	<b>416</b>	24	665	413	652	421	<b>660</b>	<b>416</b>
450.soplex	24	<b>1299</b>	<b>154</b>	1300	154	1299	154	12	<b>583</b>	<b>172</b>	584	171	583	172
453.povray	24	262	487	262	488	<b>262</b>	<b>488</b>	24	222	575	224	571	<b>222</b>	<b>574</b>
454.calculix	24	<b>500</b>	<b>396</b>	500	396	499	397	24	<b>500</b>	<b>396</b>	500	396	499	397
459.GemsFDTD	24	1860	137	1862	137	<b>1862</b>	<b>137</b>	24	1860	137	1862	137	<b>1862</b>	<b>137</b>
465.tonto	24	<b>812</b>	<b>291</b>	812	291	832	284	24	786	301	778	304	<b>784</b>	<b>301</b>
470.lbm	24	1160	284	<b>1158</b>	<b>285</b>	1157	285	12	552	298	<b>552</b>	<b>299</b>	552	299
481.wrf	24	1112	241	1118	240	<b>1113</b>	<b>241</b>	24	1112	241	1118	240	<b>1113</b>	<b>241</b>
482.sphinx3	24	2093	223	<b>2099</b>	<b>223</b>	2099	223	24	1986	236	<b>1991</b>	<b>235</b>	2007	233

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.  
numactl was used to bind copies to the cores

## 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 Disabled  
Hardware Prefetch Enabled  
Adjacent Cache Line Prefetch Enabled

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## Platform Notes (Continued)

L1 Data Prefetch Enabled

## General Notes

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 -ansi-alias

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## Base Optimization Flags (Continued)

C++ benchmarks:

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

Fortran benchmarks:

-xSSE4.2 -ipo -O3 -no-prec-div -static

Benchmarks using both Fortran and C:

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

## Peak Compiler Invocation

C benchmarks (except as noted below):

icc -m64

482.sphinx3: icc -m32

C++ benchmarks (except as noted below):

icpc -m64

450.soplex: icpc -m32

Fortran benchmarks:

ifort -m64

Benchmarks using both Fortran and C:

icc -m64 ifort -m64

## 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.deallI: -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



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## 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

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) -opt-malloc-options=3  
-ansi-alias -opt-prefetch -static -auto-ilp32

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

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: -xSSE4.2(pass 2) -prof-gen(pass 1) -ipo(pass 2) -O3(pass 2)  
-no-prec-div(pass 2) -prof-use(pass 2) -opt-malloc-options=3  
-B /usr/share/libhugetlbfs/ -Wl,-hugetlbfs-link=BDT

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

459.GemsFDTD: basepeak = yes

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) -unroll4 -auto  
-inline-calloc -opt-malloc-options=3  
-B /usr/share/libhugetlbfs/ -Wl,-melf\_x86\_64 -Wl,-hugetlbfs-link=BDT

Benchmarks using both Fortran and C:

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## Peak Optimization Flags (Continued)

435.gromacs: basepeak = yes

436.cactusADM: basepeak = yes

454.calculix: basepeak = yes

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

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