



# SPEC® CFP2006 Result

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## Oracle Corporation

### SPECfp®\_rate2006 = 196

### Sun Fire X4170 M2 (Intel Xeon L5640 2.27 GHz)

### SPECfp\_rate\_base2006 = 189

CPU2006 license: 6

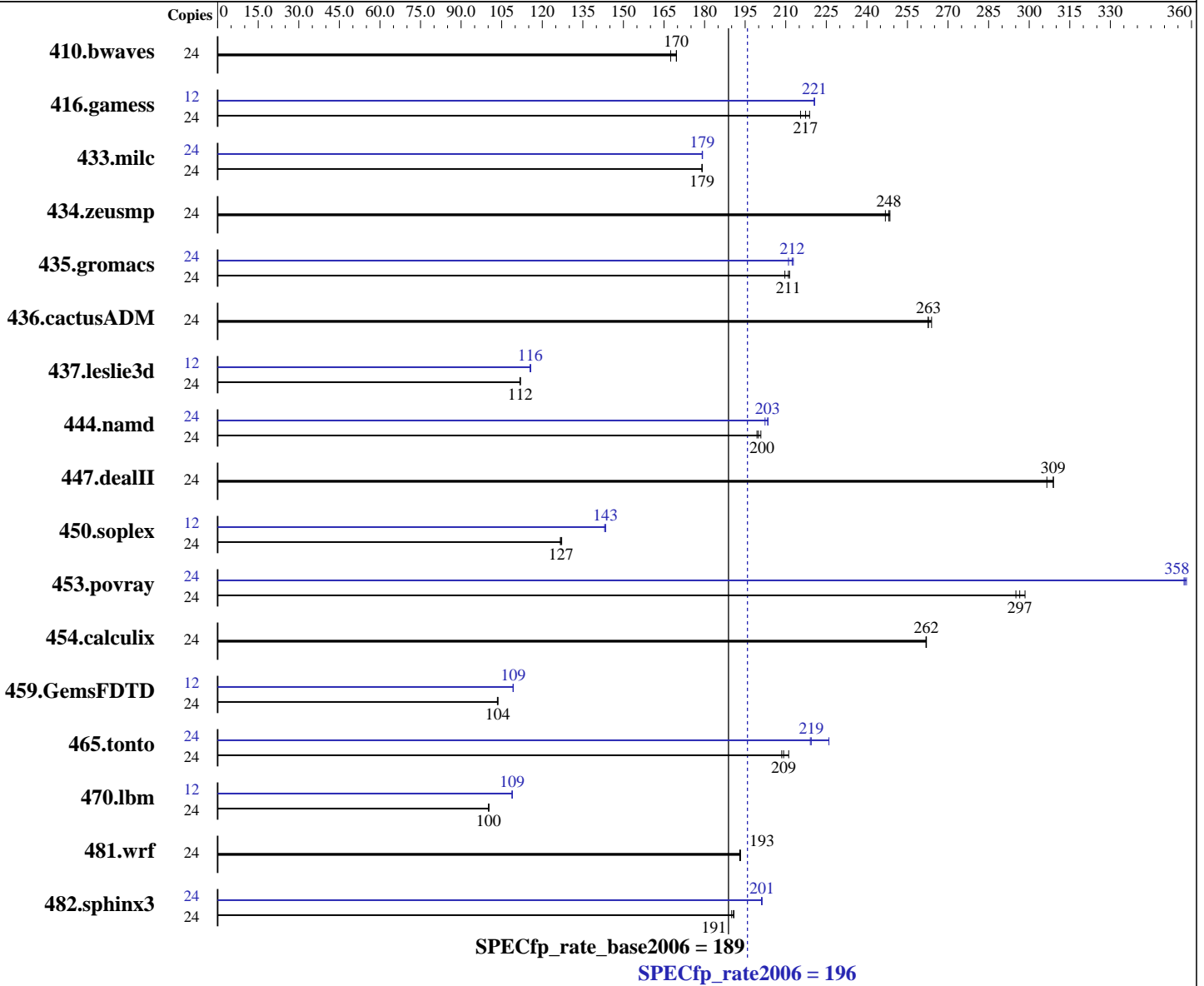
Test date: Sep-2010

Test sponsor: Oracle Corporation

Hardware Availability: Jun-2010

Tested by: Oracle Corporation

Software Availability: Apr-2010



#### Hardware

CPU Name: Intel Xeon L5640  
 CPU Characteristics: Intel Turbo Boost Technology up to 2.80 GHz  
 CPU MHz: 2267  
 FPU: Integrated  
 CPU(s) enabled: 12 cores, 2 chips, 6 cores/chip, 2 threads/core  
 CPU(s) orderable: 1 or 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 Enterprise Linux Server release 5.5 kernel 2.6.18-194.el5  
 Compiler: Intel C++ and Fortran Professional Compiler for IA32 and Intel 64, Version 11.1 Build 20091130 Package ID: l\_cproc\_p\_11.1.064, l\_cprof\_p\_11.1.064  
 Auto Parallel: No  
 File System: ext3  
 System State: Run level 3 (multi-user)

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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 146 GB SAS, 10000 RPM  
Other Hardware: None

Base Pointers: 64-bit  
Peak Pointers: 32/64-bit  
Other Software: Binutils 2.18.50.0.7.20080502

## Results Table

Benchmark	Base							Peak						
	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
410.bwaves	24	1948	167	1923	170	<u>1924</u>	<u>170</u>	24	1948	167	1923	170	<u>1924</u>	<u>170</u>
416.gamess	24	2181	215	<u>2162</u>	<u>217</u>	2148	219	12	1065	221	1065	221	<u>1065</u>	<u>221</u>
433.milc	24	1230	179	1231	179	<u>1230</u>	<u>179</u>	24	1229	179	<u>1229</u>	<u>179</u>	1230	179
434.zeusmp	24	879	249	885	247	<u>880</u>	<u>248</u>	24	879	249	885	247	<u>880</u>	<u>248</u>
435.gromacs	24	810	211	817	210	<u>812</u>	<u>211</u>	24	805	213	812	211	<u>807</u>	<u>212</u>
436.cactusADM	24	<u>1092</u>	<u>263</u>	1092	263	1087	264	24	<u>1092</u>	<u>263</u>	1092	263	1087	264
437.leslie3d	24	<u>2016</u>	<u>112</u>	2016	112	2019	112	12	974	116	<u>976</u>	<u>116</u>	976	116
444.namd	24	965	199	<u>963</u>	<u>200</u>	959	201	24	951	202	<u>947</u>	<u>203</u>	946	203
447.dealII	24	896	307	889	309	<u>889</u>	<u>309</u>	24	896	307	889	309	<u>889</u>	<u>309</u>
450.soplex	24	<u>1577</u>	<u>127</u>	1580	127	1574	127	12	700	143	<u>698</u>	<u>143</u>	698	143
453.povray	24	428	298	433	295	<u>431</u>	<u>297</u>	24	<u>357</u>	<u>358</u>	357	357	357	358
454.calculix	24	756	262	<u>756</u>	<u>262</u>	756	262	24	756	262	<u>756</u>	<u>262</u>	756	262
459.GemsFDTD	24	2457	104	<u>2460</u>	<u>104</u>	2462	103	12	1165	109	<u>1165</u>	<u>109</u>	1166	109
465.tonto	24	1119	211	<u>1129</u>	<u>209</u>	1133	209	24	<u>1076</u>	<u>219</u>	1045	226	1078	219
470.lbm	24	3288	100	3293	100	<u>3291</u>	<u>100</u>	12	1513	109	<u>1514</u>	<u>109</u>	1515	109
481.wrf	24	1387	193	<u>1388</u>	<u>193</u>	1389	193	24	1387	193	<u>1388</u>	<u>193</u>	1389	193
482.sphinx3	24	2451	191	<u>2453</u>	<u>191</u>	2462	190	24	2324	201	<u>2325</u>	<u>201</u>	2327	201

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 to invoke the command numactl to bind copies to the cores. (For details, please see the config file.)

## 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  
C-State Disabled  
Data Reuse Optimization Disabled  
Hardware Prefetch Enabled

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## Platform Notes (Continued)

Adjacent Cache Line Prefetch Enabled  
L1 Data Prefetch Enabled

## General Notes

This result is measured on a Sun Fire X4170 M2 server. The Sun Fire X4170 M2 and the Sun Fire X4270 M2 are electronically equivalent.

## 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



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## Base Optimization Flags

C benchmarks:

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

C++ benchmarks:

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

Fortran benchmarks:

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

Benchmarks using both Fortran and C:

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

## 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.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

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## Peak Portability Flags (Continued)

470.lbm: -DSPEC\_CPU\_LP64

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

## 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) -static(pass 2) -prof-use(pass 2)  
-fno-alias -opt-prefetch

470.lbm: -xSSE4.2(pass 2) -prof-gen(pass 1) -ipo(pass 2) -O3(pass 2)  
-no-prec-div(pass 2) -static(pass 2) -prof-use(pass 2)  
-opt-malloc-options=3 -ansi-alias -auto-ilp32

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

C++ benchmarks:

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

447.dealIII: basepeak = yes

450.soplex: -xSSE4.2(pass 2) -prof-gen(pass 1) -ipo(pass 2) -O3(pass 2)  
-no-prec-div(pass 2) -static(pass 2) -prof-use(pass 2)  
-opt-malloc-options=3

453.povray: -xSSE4.2(pass 2) -prof-gen(pass 1) -ipo(pass 2) -O3(pass 2)  
-no-prec-div(pass 2) -static(pass 2) -prof-use(pass 2)  
-unroll4 -ansi-alias

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) -static(pass 2) -prof-use(pass 2)  
-unroll2 -Ob0 -ansi-alias -scalar-rep-

434.zeusmp: basepeak = yes

437.leslie3d: -xSSE4.2 -ipo -O3 -no-prec-div -static

459.GemsFDTD: -xSSE4.2(pass 2) -prof-gen(pass 1) -ipo(pass 2) -O3(pass 2)  
-no-prec-div(pass 2) -static(pass 2) -prof-use(pass 2)  
-unroll2 -Ob0

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## Peak Optimization Flags (Continued)

465.tonto: -xSSE4.2(pass 2) -prof-gen(pass 1) -ipo(pass 2) -O3(pass 2)  
-no-prec-div(pass 2) -static(pass 2) -prof-use(pass 2)  
-unroll4 -auto -inline-calloc -opt-malloc-options=3

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) -static(pass 2) -prof-use(pass 2)  
-opt-prefetch -auto-ilp32

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-ic11.1-linux64-revE-pathfix-smartheap.20101027.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-ic11.1-linux64-revE-pathfix-smartheap.20101027.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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