# SPEC® CFP2006 Result
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## Oracle Corporation

$SPECfp^®\_rate2006 =$  194

Sun Fire X2270 (Intel Xeon X5550 2.67GHz)
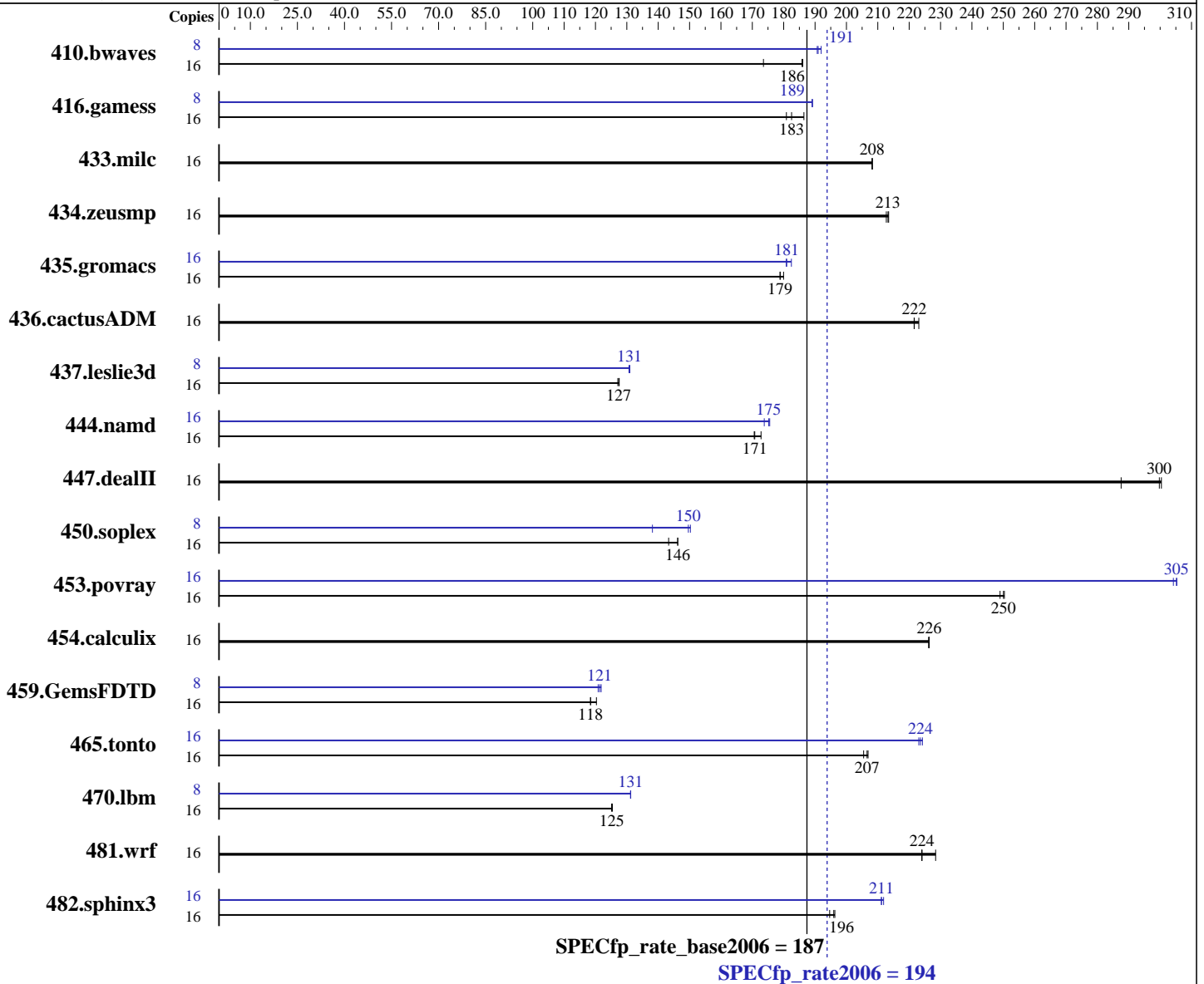
$SPECfp\_rate\_base2006 =$  187

**CPU2006 license:** 6
**Test sponsor:** Oracle Corporation
**Tested by:** Oracle Corporation

**Test date:** Jan-2010
**Hardware Availability:** Apr-2009
**Software Availability:** Dec-2009

| Benchmark | Copies | Value |
|-----------|--------|-------|
| 410.bwaves | 8 | 191 |
| 410.bwaves | 16 | 186 |
| 416.gamess | 8 | 189 |
| 416.gamess | 16 | 183 |
| 433.milc | 16 | 208 |
| 434.zeusmp | 16 | 213 |
| 435.gromacs | 16 | 181 |
| 435.gromacs | 16 | 179 |
| 436.cactusADM | 16 | 222 |
| 437.leslie3d | 8 | 131 |
| 437.leslie3d | 16 | 127 |
| 444.namd | 16 | 175 |
| 444.namd | 16 | 171 |
| 447.dealII | 16 | 300 |
| 450.soplex | 8 | 150 |
| 450.soplex | 16 | 146 |
| 453.povray | 16 | 305 |
| 453.povray | 16 | 250 |
| 454.calculix | 16 | 226 |
| 459.GemsFDTD | 8 | 121 |
| 459.GemsFDTD | 16 | 118 |
| 465.tonto | 16 | 224 |
| 465.tonto | 16 | 207 |
| 470.lbm | 8 | 131 |
| 470.lbm | 16 | 125 |
| 481.wrf | 16 | 224 |
| 482.sphinx3 | 16 | 211 |
| 482.sphinx3 | 16 | 196 |

**SPECfp_rate_base2006 = 187**

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## Hardware

CPU Name: Intel Xeon X5550
CPU Characteristics: Intel Turbo Boost Technology up to 3.06 GHz
CPU MHz: 2667
FPU: Integrated
CPU(s) enabled: 8 cores, 2 chips, 4 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

*Continued on next page*

## Software

Operating System: SuSe Linux SLES10 SP2
Compiler: Intel C++ and Fortran Professional Compiler for IA32 and Intel 64, Version 11.1
Build 20091012 Package ID: l_cproc_p_11.1.059, l_cprof_p_11.1.059
Auto Parallel: No
File System: ReiserFS
System State: Run level 3 (multi-user)
Base Pointers: 64-bit

*Continued on next page*

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| | | | |
|---|---|---|---|
| L3 Cache: | 8 MB I+D on chip per chip | Peak Pointers: | 32/64-bit |
| Other Cache: | None | Other Software: | Binutils 2.18.50.0.7.20080502 |
| Memory: | 24 GB (6 x 4 GB DDR3-1333) | | |
| Disk Subsystem: | 1 x 1 TB, SATA, 7200 RPM | | |
| Other Hardware: | None | | |

## Results Table

| Benchmark | Base | | | | | | Peak | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Copies | Seconds | Ratio | Seconds | Ratio | Seconds | Ratio | Copies | Seconds | Ratio | Seconds | Ratio | Seconds | Ratio |
| 410.bwaves | 16 | 1253 | 174 | 1168 | 186 | **1170** | **186** | 8 | 570 | 191 | 566 | 192 | **569** | **191** |
| 416.gamess | 16 | **1716** | **183** | 1732 | 181 | 1680 | 186 | 8 | 829 | 189 | **828** | **189** | 828 | 189 |
| 433.milc | 16 | **705** | **208** | 705 | 208 | 705 | 208 | 16 | **705** | **208** | 705 | 208 | 705 | 208 |
| 434.zeusmp | 16 | 682 | 213 | 684 | 213 | **683** | **213** | 16 | 682 | 213 | 684 | 213 | **683** | **213** |
| 435.gromacs | 16 | **639** | **179** | 635 | 180 | 639 | 179 | 16 | 626 | 182 | **631** | **181** | 632 | 181 |
| 436.cactusADM | 16 | 857 | 223 | **863** | **222** | 863 | 222 | 16 | 857 | 223 | **863** | **222** | 863 | 222 |
| 437.leslie3d | 16 | 1179 | 128 | 1183 | 127 | **1180** | **127** | 8 | 574 | 131 | **574** | **131** | 575 | 131 |
| 444.namd | 16 | 752 | 171 | 743 | 173 | **751** | **171** | 16 | 731 | 176 | **732** | **175** | 738 | 174 |
| 447.dealII | 16 | 609 | 300 | **611** | **300** | 637 | 288 | 16 | 609 | 300 | **611** | **300** | 637 | 288 |
| 450.soplex | 16 | 931 | 143 | **913** | **146** | 913 | 146 | 8 | 483 | 138 | **446** | **150** | 444 | 150 |
| 453.povray | 16 | 340 | 250 | 342 | 249 | **340** | **250** | 16 | 280 | 304 | 279 | 305 | **279** | **305** |
| 454.calculix | 16 | 584 | 226 | 583 | 226 | **583** | **226** | 16 | 584 | 226 | 583 | 226 | **583** | **226** |
| 459.GemsFDTD | 16 | 1433 | 118 | **1433** | **118** | 1411 | 120 | 8 | **699** | **121** | 697 | 122 | 702 | 121 |
| 465.tonto | 16 | 766 | 205 | 761 | 207 | **762** | **207** | 16 | 706 | 223 | **704** | **224** | 702 | 224 |
| 470.lbm | 16 | 1756 | 125 | 1753 | 125 | **1755** | **125** | 8 | 838 | 131 | **838** | **131** | 838 | 131 |
| 481.wrf | 16 | 782 | 228 | 798 | 224 | **797** | **224** | 16 | 782 | 228 | 798 | 224 | **797** | **224** |
| 482.sphinx3 | 16 | 1602 | 195 | 1589 | 196 | **1591** | **196** | 16 | 1472 | 212 | **1477** | **211** | 1477 | 211 |

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

    Default BIOS (Version 1.14) settings used.

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**Test date:** Jan-2010
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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
   436.cactusADM: -DSPEC_CPU_LP64
     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
    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
```

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:

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## Base Optimization Flags (Continued)

435.gromacs: `-xSSE4.2 -ipo -O3 -no-prec-div -static -nofor_main(*)`

436.cactusADM: `Same as 435.gromacs`

454.calculix: `Same as 435.gromacs`

481.wrf: `-xSSE4.2 -ipo -O3 -no-prec-div -static`

(*) Indicates an optimization flag that was found in a portability variable.

## 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`
436.cactusADM: `-DSPEC_CPU_LP64`
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`
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: `basepeak = yes`

    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.dealII: `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: `-xSSE4.2 -ipo -O3 -no-prec-div -static -opt-prefetch`

    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(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 -opt-prefetch`

  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`

    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:

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# Peak Optimization Flags (Continued)

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 -nofor_main(*)

436.cactusADM: basepeak = yes

454.calculix: basepeak = yes

481.wrf: basepeak = yes

(*) Indicates an optimization flag that was found in a portability variable.

The flags file that was used to format this result can be browsed at
http://www.spec.org/cpu2006/flags/Intel-ic11.1-linux64-revD.20091208.html

You can also download the XML flags source by saving the following link:
http://www.spec.org/cpu2006/flags/Intel-ic11.1-linux64-revD.20091208.xml

For questions about this result, please contact the tester.
For other inquiries, please contact webmaster@spec.org.

Tested with SPEC CPU2006 v1.1.
Report generated on Wed Jul 23 06:38:06 2014 by SPEC CPU2006 PS/PDF formatter v6932.
Originally published on 16 February 2010.