



# SPEC<sup>®</sup> CFP2006 Result

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## ACTION S.A.

SPECfp<sup>®</sup>\_rate2006 = 168

### ACTINA SOLAR 222 S5 (Intel Xeon E5-2620)

SPECfp\_rate\_base2006 = 164

CPU2006 license: 9008

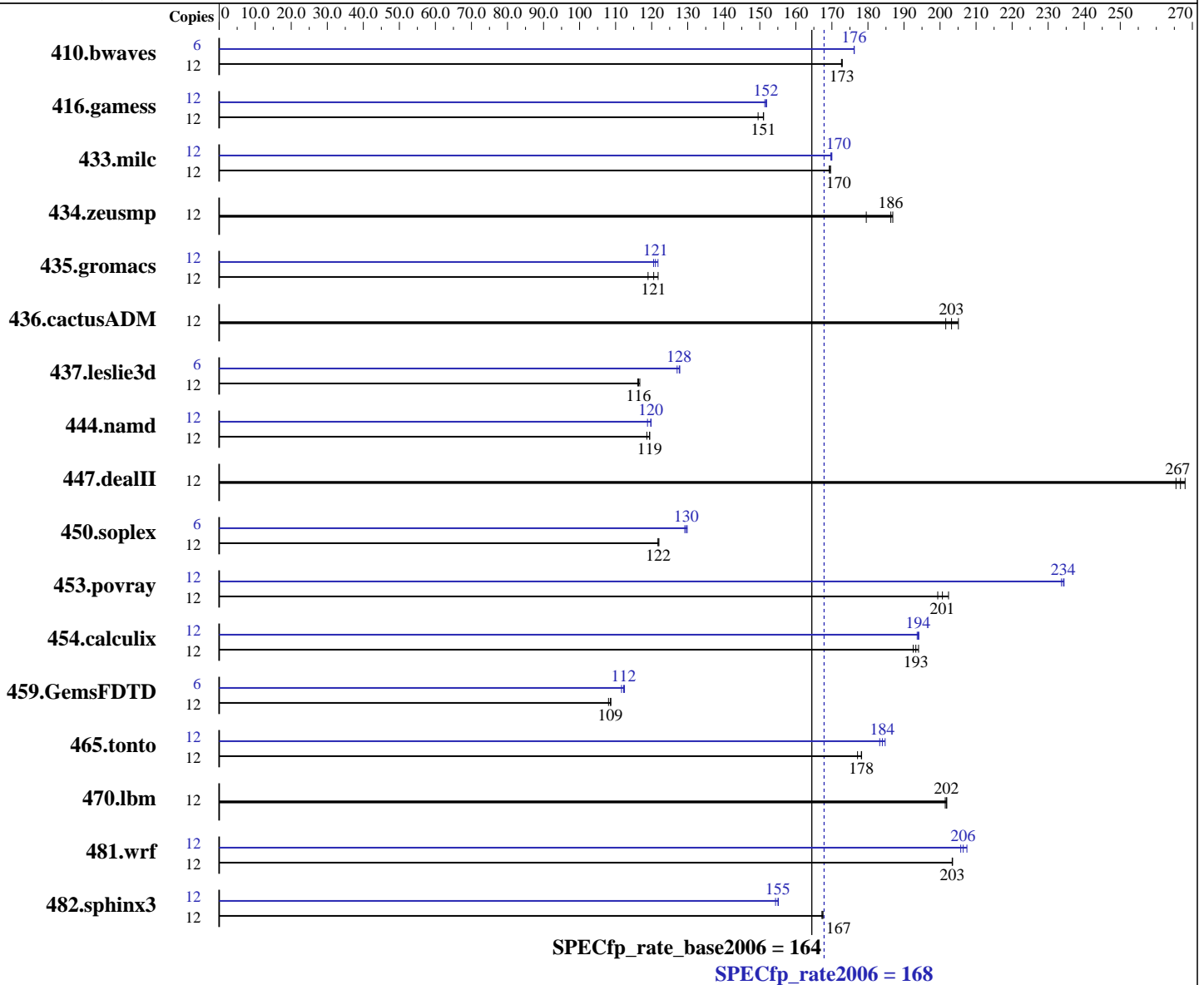
Test sponsor: ACTION S.A.

Tested by: ACTION S.A.

Test date: Dec-2012

Hardware Availability: Mar-2012

Software Availability: Feb-2012



### Hardware

CPU Name: Intel Xeon E5-2620  
 CPU Characteristics: Intel Turbo Boost Technology up to 2.50 GHz  
 CPU MHz: 2000  
 FPU: Integrated  
 CPU(s) enabled: 6 cores, 1 chip, 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

Continued on next page

### Software

Operating System: SUSE Linux Enterprise Server 11 SP2 (x86\_64) 3.0.13-0.27-default  
 Compiler: C/C++: Version 12.1.0.225 of Intel C++ Studio XE for Linux;  
 Fortran: Version 12.1.0.225 of Intel Fortran Studio XE for Linux  
 Auto Parallel: No  
 File System: ext3  
 System State: Run level 3 (multi-user)

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**L3 Cache:** 15 MB I+D on chip per chip  
**Other Cache:** None  
**Memory:** 128 GB (8 x 16 GB 2Rx4 PC3-12800R-11, ECC, running at 1333 MHz and CL9)  
**Disk Subsystem:** 1 x 2 TB SATA, 7200 RPM  
**Other Hardware:** None

**Base Pointers:** 32/64-bit  
**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    | 12     | 943         | 173        | 945        | 173        | <b>944</b>  | <b>173</b> | 6      | <b>463</b> | <b>176</b> | 463         | 176        | 463         | 176        |
| 416.gamess    | 12     | <b>1556</b> | <b>151</b> | 1571       | 150        | 1555        | 151        | 12     | 1547       | 152        | <b>1549</b> | <b>152</b> | 1552        | 151        |
| 433.milc      | 12     | 649         | 170        | 651        | 169        | <b>650</b>  | <b>170</b> | 12     | 649        | 170        | 648         | 170        | <b>648</b>  | <b>170</b> |
| 434.zeusmp    | 12     | 608         | 180        | <b>586</b> | <b>186</b> | 584         | 187        | 12     | 608        | 180        | <b>586</b>  | <b>186</b> | 584         | 187        |
| 435.gromacs   | 12     | 704         | 122        | <b>711</b> | <b>121</b> | 720         | 119        | 12     | <b>708</b> | <b>121</b> | 704         | 122        | 711         | 121        |
| 436.cactusADM | 12     | 699         | 205        | <b>706</b> | <b>203</b> | 711         | 202        | 12     | 699        | 205        | <b>706</b>  | <b>203</b> | 711         | 202        |
| 437.leslie3d  | 12     | 967         | 117        | 971        | 116        | <b>969</b>  | <b>116</b> | 6      | 441        | 128        | <b>442</b>  | <b>128</b> | 444         | 127        |
| 444.namd      | 12     | <b>806</b>  | <b>119</b> | 806        | 119        | 811         | 119        | 12     | <b>804</b> | <b>120</b> | 803         | 120        | 810         | 119        |
| 447.dealII    | 12     | <b>515</b>  | <b>267</b> | 512        | 268        | 517         | 265        | 12     | <b>515</b> | <b>267</b> | 512         | 268        | 517         | 265        |
| 450.soplex    | 12     | 822         | 122        | 820        | 122        | <b>822</b>  | <b>122</b> | 6      | 385        | 130        | 387         | 129        | <b>386</b>  | <b>130</b> |
| 453.povray    | 12     | 320         | 199        | <b>318</b> | <b>201</b> | 315         | 202        | 12     | 272        | 234        | 273         | 234        | <b>273</b>  | <b>234</b> |
| 454.calculix  | 12     | 510         | 194        | <b>512</b> | <b>193</b> | 514         | 193        | 12     | <b>510</b> | <b>194</b> | 510         | 194        | 511         | 194        |
| 459.GemsFDTD  | 12     | 1179        | 108        | 1171       | 109        | <b>1173</b> | <b>109</b> | 6      | <b>567</b> | <b>112</b> | 566         | 112        | 570         | 112        |
| 465.tonto     | 12     | 667         | 177        | <b>663</b> | <b>178</b> | 662         | 178        | 12     | <b>642</b> | <b>184</b> | 639         | 185        | 644         | 183        |
| 470.lbm       | 12     | 817         | 202        | <b>817</b> | <b>202</b> | 818         | 201        | 12     | 817        | 202        | <b>817</b>  | <b>202</b> | 818         | 201        |
| 481.wrf       | 12     | <b>659</b>  | <b>203</b> | 659        | 203        | 659         | 203        | 12     | <b>649</b> | <b>206</b> | 651         | 206        | 646         | 207        |
| 482.sphinx3   | 12     | 1398        | 167        | 1396       | 168        | <b>1398</b> | <b>167</b> | 12     | 1515       | 154        | 1507        | 155        | <b>1509</b> | <b>155</b> |

Results appear in the order in which they were run. Bold underlined text indicates a median measurement.

## Submit Notes

The taskset mechanism was used to bind copies to processors. The config file option 'submit' was used to generate taskset commands to bind each copy to a specific processor. For details, please see the config file.

## Operating System Notes

Stack size set to unlimited using "ulimit -s unlimited"



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**CPU2006 license:** 9008

**Test date:** Dec-2012

**Test sponsor:** ACTION S.A.

**Hardware Availability:** Mar-2012

**Tested by:** ACTION S.A.

**Software Availability:** Feb-2012

## Platform Notes

Sysinfo program /cpu2006.1.2/config/sysinfo.rev6800  
\$Rev: 6800 \$ \$Date:: 2011-10-11 # \$ 6f2ebdff5032aaa42e583f96b07f99d3  
running on SUT Fri Dec 7 23:49:16 2012

This section contains SUT (System Under Test) info as seen by some common utilities. To remove or add to this section, see:  
<http://www.spec.org/cpu2006/Docs/config.html#sysinfo>

From /proc/cpuinfo  
model name : Intel(R) Xeon(R) CPU E5-2620 0 @ 2.00GHz  
1 "physical id"s (chips)  
12 "processors"  
cores, siblings (Caution: counting these is hw and system dependent. The following excerpts from /proc/cpuinfo might not be reliable. Use with caution.)  
cpu cores : 6  
siblings : 12  
physical 0: cores 0 1 2 3 4 5  
cache size : 15360 KB

From /proc/meminfo  
MemTotal: 132117212 kB  
HugePages\_Total: 0  
Hugepagesize: 2048 kB

/usr/bin/lsb\_release -d  
SUSE Linux Enterprise Server 11 (x86\_64)

From /etc/\*release\* /etc/\*version\*  
SuSE-release:  
SUSE Linux Enterprise Server 11 (x86\_64)  
VERSION = 11  
PATCHLEVEL = 2

uname -a:  
Linux SUT 3.0.13-0.27-default #1 SMP Wed Feb 15 13:33:49 UTC 2012 (d73692b)  
x86\_64 x86\_64 x86\_64 GNU/Linux

run-level 3 Dec 7 09:36 last=S

SPEC is set to: /cpu2006.1.2  
Filesystem Type Size Used Avail Use% Mounted on  
/dev/sda2 ext3 1.8T 69G 1.8T 4% /

Additional information from dmidecode:

(End of data from sysinfo program)



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## General Notes

Environment variables set by runspec before the start of the run:  
LD\_LIBRARY\_PATH = "/cpu2006.1.2/libs/32:/cpu2006.1.2/libs/64"

Binaries compiled on a system with 1x Core i7-860 CPU + 8GB  
memory using RHEL5.5

## 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.deallI: -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:

-xAVX -ipo -O3 -no-prec-div -static -opt-prefetch -auto-p32  
-ansi-alias -opt-mem-layout-trans=3

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## Base Optimization Flags (Continued)

C++ benchmarks:

-xAVX -ipo -O3 -no-prec-div -static -opt-prefetch -auto-p32  
-ansi-alias -opt-mem-layout-trans=3

Fortran benchmarks:

-xAVX -ipo -O3 -no-prec-div -static -opt-prefetch

Benchmarks using both Fortran and C:

-xAVX -ipo -O3 -no-prec-div -static -opt-prefetch -auto-p32  
-ansi-alias -opt-mem-layout-trans=3

## 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  
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: -xAVX(pass 2) -prof-gen(pass 1) -ipo(pass 2) -O3(pass 2)  
-no-prec-div(pass 2) -prof-use(pass 2) -static -auto-ilp32  
-opt-mem-layout-trans=3

470.lbm: basepeak = yes

482.sphinx3: -xAVX -ipo -O3 -no-prec-div -unroll2

### C++ benchmarks:

444.namd: -xAVX(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.dealIII: basepeak = yes

450.soplex: -xAVX(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

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

### Fortran benchmarks:

410.bwaves: -xAVX(pass 2) -prof-gen(pass 1) -ipo(pass 2) -O3(pass 2)  
-no-prec-div(pass 2) -prof-use(pass 2) -static

416.gamess: -xAVX(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: -xAVX -ipo -O3 -no-prec-div -static -opt-prefetch

459.GemsFDTD: -xAVX(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

465.tonto: -xAVX(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

### Benchmarks using both Fortran and C:

435.gromacs: -xAVX(pass 2) -prof-gen(pass 1) -ipo(pass 2) -O3(pass 2)  
-no-prec-div(pass 2) -prof-use(pass 2) -opt-prefetch  
-static -auto-ilp32 -opt-mem-layout-trans=3

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## Peak Optimization Flags (Continued)

436.cactusADM: basepeak = yes

454.calculix: -xAVX -ipo -O3 -no-prec-div -static -auto-ilp32  
-opt-mem-layout-trans=3

481.wrf: Same as 454.calculix

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

<http://www.spec.org/cpu2006/flags/Intel-ic12.1-official-linux64.20111122.html>

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

<http://www.spec.org/cpu2006/flags/Intel-ic12.1-official-linux64.20111122.xml>

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