



# SPEC® CFP2006 Result

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## ACTION S.A.

ACTINA SOLAR 220 X6 (Intel Xeon E5-2680 v3, 2.50 GHz)

SPECfp®2006 = 112

SPECfp\_base2006 = 107

CPU2006 license: 9008

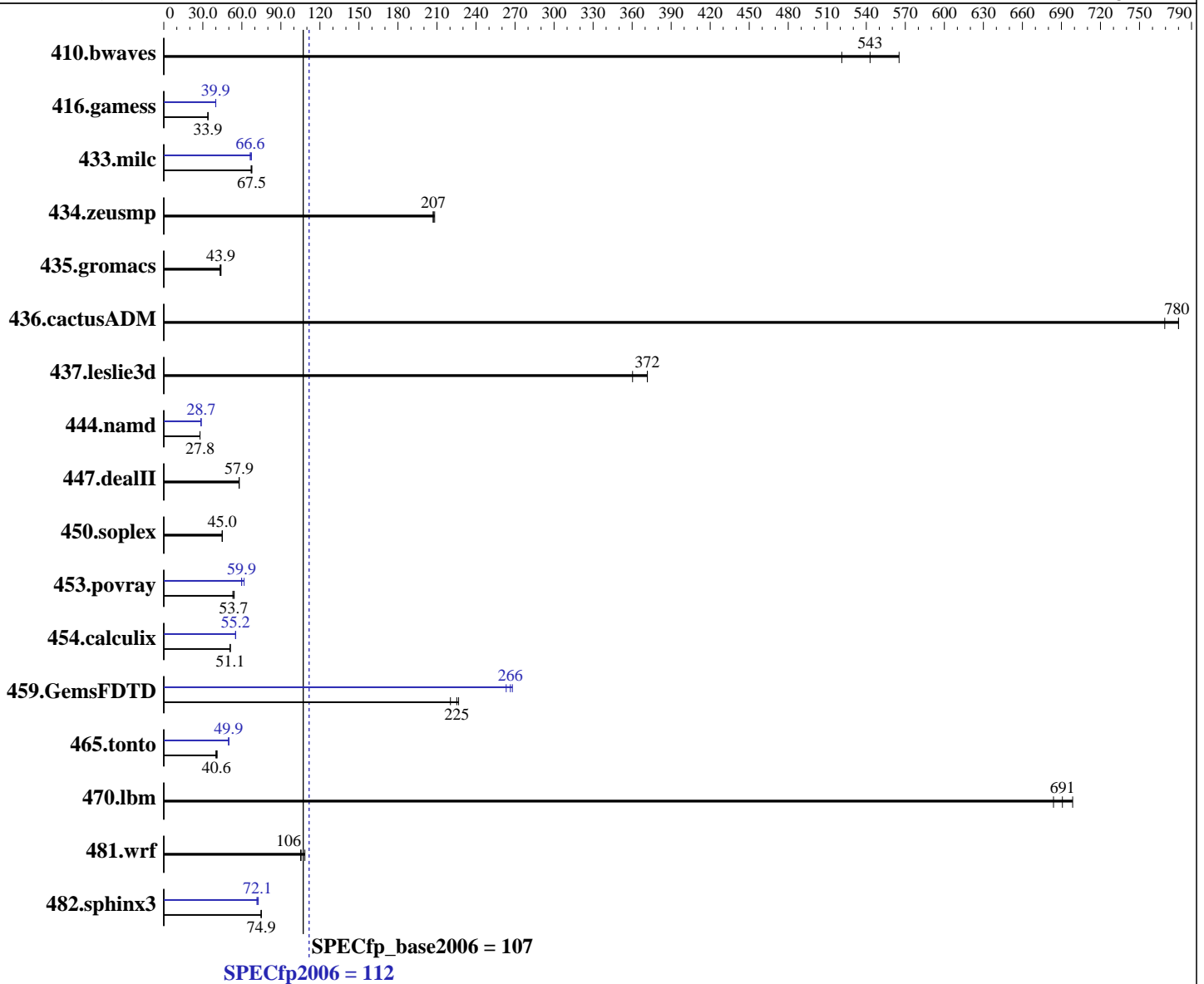
Test sponsor: ACTION S.A.

Tested by: ACTION S.A.

Test date: Oct-2015

Hardware Availability: Sep-2014

Software Availability: Aug-2015



### Hardware

CPU Name: Intel Xeon E5-2680 v3  
 CPU Characteristics: Intel Turbo Boost Technology up to 3.30 GHz  
 CPU MHz: 2500  
 FPU: Integrated  
 CPU(s) enabled: 24 cores, 2 chips, 12 cores/chip  
 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: Red Hat Enterprise Linux Server release 7.1 (Maipo)  
 3.10.0-229.11.1.el7.x86\_64  
 Compiler: C/C++: Version 16.0.0.047 of Intel C++ Studio XE for Linux;  
 Fortran: Version 16.0.0.047 of Intel Fortran Studio XE for Linux  
 Auto Parallel: Yes  
 File System: ext4

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L3 Cache: 30 MB I+D on chip per chip  
Other Cache: None  
Memory: 256 GB (16 x 16 GB 2Rx4 PC4-2133P-R)  
Disk Subsystem: 1 x 240 GB SATA II SSD  
Other Hardware: None

System State: Run level 3 (multi-user)  
Base Pointers: 64-bit  
Peak Pointers: 32/64-bit  
Other Software: None

## Results Table

Benchmark	Base						Peak					
	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
410.bwaves	26.1	521	<u>25.0</u>	<u>543</u>	24.0	565	26.1	521	<u>25.0</u>	<u>543</u>	24.0	565
416.gamess	577	34.0	<u>577</u>	<u>33.9</u>	577	33.9	<u>490</u>	<u>39.9</u>	490	40.0	491	39.9
433.milc	136	67.7	<u>136</u>	<u>67.5</u>	137	67.1	138	66.5	136	67.4	<u>138</u>	<u>66.6</u>
434.zeusmp	44.0	207	<u>43.9</u>	<u>207</u>	43.7	208	44.0	207	<u>43.9</u>	<u>207</u>	43.7	208
435.gromacs	<u>163</u>	<u>43.9</u>	165	43.2	163	43.9	<u>163</u>	<u>43.9</u>	165	43.2	163	43.9
436.cactusADM	15.5	769	15.3	780	<u>15.3</u>	<u>780</u>	15.5	769	15.3	780	<u>15.3</u>	<u>780</u>
437.leslie3d	25.3	372	26.1	360	<u>25.3</u>	<u>372</u>	25.3	372	26.1	360	<u>25.3</u>	<u>372</u>
444.namd	<u>288</u>	<u>27.8</u>	288	27.8	288	27.8	280	28.7	<u>280</u>	<u>28.7</u>	280	28.7
447.dealII	197	58.0	<u>197</u>	<u>57.9</u>	198	57.8	197	58.0	<u>197</u>	<u>57.9</u>	198	57.8
450.soplex	185	45.0	186	44.8	<u>186</u>	<u>45.0</u>	185	45.0	186	44.8	<u>186</u>	<u>45.0</u>
453.povray	98.2	54.2	<u>99.1</u>	<u>53.7</u>	100	53.1	<u>88.8</u>	<u>59.9</u>	86.1	61.8	88.9	59.8
454.calculix	161	51.1	<u>162</u>	<u>51.1</u>	162	50.9	<u>149</u>	<u>55.2</u>	149	55.2	150	55.1
459.GemsFDTD	<u>47.1</u>	<u>225</u>	48.2	220	46.8	227	40.3	263	39.6	268	<u>39.8</u>	<u>266</u>
465.tonto	246	40.0	240	41.0	<u>243</u>	<u>40.6</u>	197	49.9	<u>197</u>	<u>49.9</u>	197	49.9
470.lbm	20.1	684	19.7	699	<u>19.9</u>	<u>691</u>	20.1	684	19.7	699	<u>19.9</u>	<u>691</u>
481.wrf	106	105	103	108	<u>106</u>	<u>106</u>	106	105	103	108	<u>106</u>	<u>106</u>
482.sphinx3	<u>260</u>	<u>74.9</u>	261	74.8	260	75.0	<u>270</u>	<u>72.1</u>	268	72.7	272	71.6

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

## Operating System Notes

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

## Platform Notes

Bios Settings:  
Intel(R) Hyper-Threading Tech = Disabled  
Power & Performance = Performance  
Enforce POR = Disabled  
Memory Operating Speed Selection = 2133  
Cluster-on-Die = Disabled  
Set Fan Profile = Performance  
Fan PWM Offset = 0

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### Platform Notes (Continued)

Sysinfo program /cpu2006.1.2/config/sysinfo.rev6818  
\$Rev: 6818 \$ \$Date:: 2012-07-17 #\$ e86d102572650a6e4d596a3cee98f191  
running on SUT Mon Oct 19 20:48:21 2015

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 E5-2680 v3 @ 2.50GHz
 2 "physical id"s (chips)
 24 "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 : 12
siblings   : 12
physical 0: cores 0 1 2 3 4 5 8 9 10 11 12 13
physical 1: cores 0 1 2 3 4 5 8 9 10 11 12 13
cache size : 30720 KB
```

From /proc/meminfo

```
MemTotal:      263866880 kB
HugePages_Total: 1
Hugepagesize:   2048 kB
```

From /etc/\*release\* /etc/\*version\*

os-release:

```
NAME="Red Hat Enterprise Linux Server"
VERSION="7.0 (Maipo)"
ID="rhel"
ID_LIKE="fedora"
VERSION_ID="7.0"
PRETTY_NAME="Red Hat Enterprise Linux"
ANSI_COLOR="0;31"
CPE_NAME="cpe:/o:redhat:enterprise_linux:7.0:GA:server"
```

os-release.rpmnew:

```
NAME="Red Hat Enterprise Linux Server"
VERSION="7.1 (Maipo)"
ID="rhel"
ID_LIKE="fedora"
VERSION_ID="7.1"
PRETTY_NAME="Red Hat Enterprise Linux Server 7.1 (Maipo)"
ANSI_COLOR="0;31"
CPE_NAME="cpe:/o:redhat:enterprise_linux:7.1:GA:server"
```

redhat-release: Red Hat Enterprise Linux Server release 7.1 (Maipo)

system-release: Red Hat Enterprise Linux Server release 7.1 (Maipo)

system-release-cpe: cpe:/o:redhat:enterprise\_linux:7.1:ga:server

uname -a:

```
Linux SUT 3.10.0-229.11.1.el7.x86_64 #5 SMP Mon Sep 14 17:11:19 CEST 2015
x86_64 x86_64 x86_64 GNU/Linux
```

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## Platform Notes (Continued)

run-level 3 Oct 19 15:31

SPEC is set to: /cpu2006.1.2

Filesystem	Type	Size	Used	Avail	Use%	Mounted on
/dev/sdal	ext4	212G	38G	163G	19%	/

Additional information from dmidecode:

BIOS Intel Corporation SE5C610.86B.01.01.0009.060120151350 06/01/2015

Memory:

16x 16 GB

16x Micron 36ASF2G72PZ-2G1A2 16 GB 2134 MHz 2 rank

8x NO DIMM NO DIMM

(End of data from sysinfo program)

dmidecode does not properly detect memory modules

16 modules of 16 GB were used to run the test (256 GB total)

## 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:/cpu2006.1.2/sh"

OMP\_NUM\_THREADS = "24"

Transparent Huge Pages enabled with:

echo always > /sys/kernel/mm/redhat\_transparent\_hugepage/enabled

runspec command invoked through numactl i.e.:

numactl --interleave=all runspec <etc>

Binaries compiled on a system with 2x Xeon E5-2650 v3 chips + 256 GB memory using RedHat EL 7.1

## 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



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## 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:

```

-xCORE-AVX2 -ipo -O3 -no-prec-div -parallel -opt-prefetch
-ansi-alias

```

C++ benchmarks:

```

-xCORE-AVX2 -ipo -O3 -no-prec-div -opt-prefetch -ansi-alias

```

Fortran benchmarks:

```

-xCORE-AVX2 -ipo -O3 -no-prec-div -parallel -opt-prefetch

```

Benchmarks using both Fortran and C:

```

-xCORE-AVX2 -ipo -O3 -no-prec-div -parallel -opt-prefetch
-ansi-alias

```

## Peak Compiler Invocation

C benchmarks:

```

icc -m64

```

C++ benchmarks:

```

icpc -m64

```

Fortran benchmarks:

```

ifort -m64

```

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## Peak Compiler Invocation (Continued)

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: -xCORE-AVX2(pass 2) -prof-gen(pass 1) -ipo(pass 2)  
-O3(pass 2) -no-prec-div(pass 2) -prof-use(pass 2)  
-auto-ilp32 -ansi-alias

470.lbm: basepeak = yes

482.sphinx3: -xCORE-AVX2 -ipo -O3 -no-prec-div -unroll2 -ansi-alias  
-parallel

C++ benchmarks:

444.namd: -xCORE-AVX2(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: basepeak = yes

453.povray: -xCORE-AVX2(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: basepeak = yes

416.gamess: -xCORE-AVX2(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-

434.zeusmp: basepeak = yes

437.leslie3d: basepeak = yes

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## Peak Optimization Flags (Continued)

459.GemsFDTD: -xCORE-AVX2(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

465.tonto: -xCORE-AVX2(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

Benchmarks using both Fortran and C:

435.gromacs: basepeak = yes

436.cactusADM: basepeak = yes

454.calculix: -xCORE-AVX2 -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-ic16.0-official-linux64.html>

<http://www.spec.org/cpu2006/flags/ACTION.SA-Platform-Flags-RevB-aug-2015-For-Intel-Platform.html>

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

<http://www.spec.org/cpu2006/flags/Intel-ic16.0-official-linux64.xml>

<http://www.spec.org/cpu2006/flags/ACTION.SA-Platform-Flags-RevB-aug-2015-For-Intel-Platform.xml>

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

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