



# SPEC® CFP2006 Result

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## ACTION S.A.

ACTINA SOLAR 222 S6 (Intel Xeon E5-2690 v3, 2.60 GHz)

SPECfp®2006 = **115**

SPECfp\_base2006 = **111**

CPU2006 license: 9008

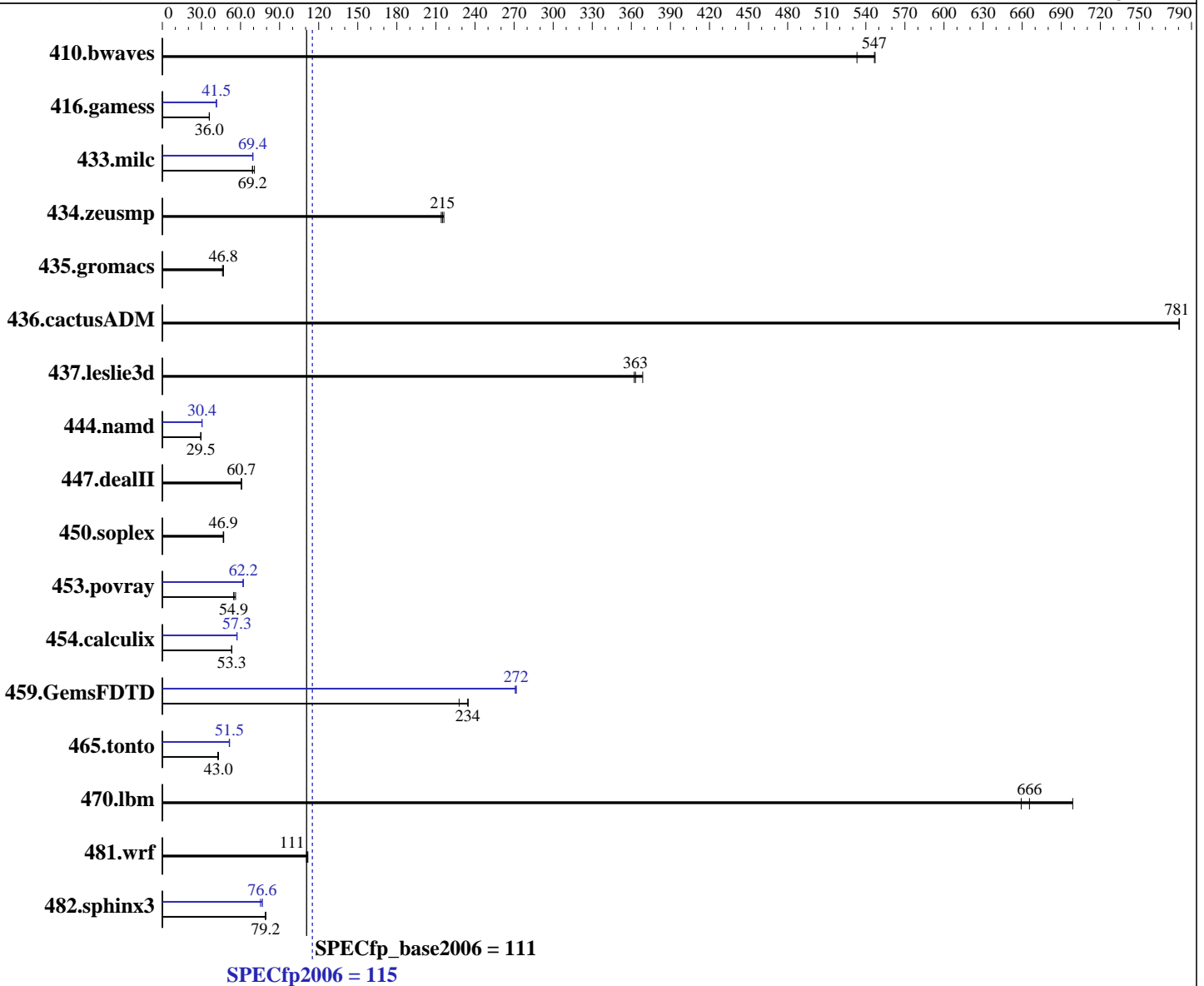
Test sponsor: ACTION S.A.

Tested by: ACTION S.A.

Test date: Nov-2015

Hardware Availability: Sep-2014

Software Availability: Aug-2015



### Hardware

CPU Name: Intel Xeon E5-2690 v3  
 CPU Characteristics: Intel Turbo Boost Technology up to 3.50 GHz  
 CPU MHz: 2600  
 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 PC4-2400P-R, running at 2133 MHz)  
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    | <b>24.9</b> | <b>547</b>  | 24.8        | 547         | 25.5        | 533         | <b>24.9</b> | <b>547</b>  | 24.8        | 547         | 25.5        | 533         |
| 416.gamess    | 543         | 36.1        | 543         | 36.0        | <b>543</b>  | <b>36.0</b> | 472         | 41.5        | 472         | 41.5        | <b>472</b>  | <b>41.5</b> |
| 433.milc      | 130         | 70.7        | <b>133</b>  | <b>69.2</b> | 133         | 69.2        | 132         | 69.4        | <b>132</b>  | <b>69.4</b> | 132         | 69.5        |
| 434.zeusmp    | 42.5        | 214         | <b>42.3</b> | <b>215</b>  | 42.1        | 216         | 42.5        | 214         | <b>42.3</b> | <b>215</b>  | 42.1        | 216         |
| 435.gromacs   | <b>153</b>  | <b>46.8</b> | 152         | 46.9        | 155         | 46.1        | <b>153</b>  | <b>46.8</b> | 152         | 46.9        | 155         | 46.1        |
| 436.cactusADM | 15.3        | 780         | <b>15.3</b> | <b>781</b>  | 15.3        | 781         | 15.3        | 780         | <b>15.3</b> | <b>781</b>  | 15.3        | 781         |
| 437.leslie3d  | <b>25.9</b> | <b>363</b>  | 26.0        | 362         | 25.5        | 369         | <b>25.9</b> | <b>363</b>  | 26.0        | 362         | 25.5        | 369         |
| 444.namd      | 271         | 29.6        | 271         | 29.5        | <b>271</b>  | <b>29.5</b> | <b>263</b>  | <b>30.4</b> | 263         | 30.5        | 264         | 30.4        |
| 447.dealII    | 188         | 60.7        | 189         | 60.7        | <b>188</b>  | <b>60.7</b> | 188         | 60.7        | 189         | 60.7        | <b>188</b>  | <b>60.7</b> |
| 450.soplex    | 178         | 46.7        | <b>178</b>  | <b>46.9</b> | 177         | 47.1        | 178         | 46.7        | <b>178</b>  | <b>46.9</b> | 177         | 47.1        |
| 453.povray    | <b>97.0</b> | <b>54.9</b> | 94.7        | 56.2        | 97.0        | 54.8        | 86.0        | 61.9        | 85.6        | 62.2        | <b>85.6</b> | <b>62.2</b> |
| 454.calculix  | 155         | 53.4        | <b>155</b>  | <b>53.3</b> | 155         | 53.2        | 144         | 57.4        | <b>144</b>  | <b>57.3</b> | 144         | 57.2        |
| 459.GemsFDTD  | <b>45.3</b> | <b>234</b>  | 46.6        | 228         | 45.2        | 235         | 39.2        | 271         | 39.1        | 272         | <b>39.1</b> | <b>272</b>  |
| 465.tonto     | 231         | 42.5        | <b>229</b>  | <b>43.0</b> | 228         | 43.1        | 192         | 51.3        | 191         | 51.6        | <b>191</b>  | <b>51.5</b> |
| 470.lbm       | 19.7        | 699         | 20.8        | 659         | <b>20.6</b> | <b>666</b>  | 19.7        | 699         | 20.8        | 659         | <b>20.6</b> | <b>666</b>  |
| 481.wrf       | 100         | 112         | <b>100</b>  | <b>111</b>  | 101         | 111         | 100         | 112         | <b>100</b>  | <b>111</b>  | 101         | 111         |
| 482.sphinx3   | <b>246</b>  | <b>79.2</b> | 247         | 79.0        | 245         | 79.4        | <b>254</b>  | <b>76.6</b> | 254         | 76.7        | 259         | 75.2        |

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  
Hyper-Threading (All) = Disable  
Power Technology = Energy Efficient  
Enforce POR = Disabled  
Memory Frequency = 2133  
COD Enable = Disable

BMC Setting

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Test date: Nov-2015

Hardware Availability: Sep-2014

Software Availability: Aug-2015

### Platform Notes (Continued)

Fan Mode = Full Speed

Sysinfo program /cpu2006.1.2/config/sysinfo.rev6818  
\$Rev: 6818 \$ \$Date:: 2012-07-17 #\$ e86d102572650a6e4d596a3cee98f191  
running on SUT Thu Nov 5 20:11:52 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 E5-2690 v3 @ 2.60GHz
 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:      263868004 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:

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### Platform Notes (Continued)

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

run-level 3 Nov 5 15:10

SPEC is set to: /cpu2006.1.2

| Filesystem | Type | Size | Used | Avail | Use% | Mounted on |
|------------|------|------|------|-------|------|------------|
| /dev/sda1  | ext4 | 212G | 38G  | 163G  | 19%  | /          |

Additional information from dmidecode:

BIOS American Megatrends Inc. 1.0c 01/07/2015

Memory:

16x 16 GB

16x Hynix Semiconductor (date:15/28) HMA42GR7AFR4N-UH 16 GB 2133 MHz 2 rank

(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.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:

```

-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-RevD-aug-2015-For-Supermicro-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-RevD-aug-2015-For-Supermicro-Platform.xml>

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

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