



# SPEC<sup>®</sup> CFP2006 Result

Copyright 2006-2014 Standard Performance Evaluation Corporation

## ACTION S.A.

SPECfp<sup>®</sup>\_rate2006 = **682**

ACTINA SOLAR 410 A2 (AMD Opteron 6272)

SPECfp\_rate\_base2006 = **637**

CPU2006 license: 9008

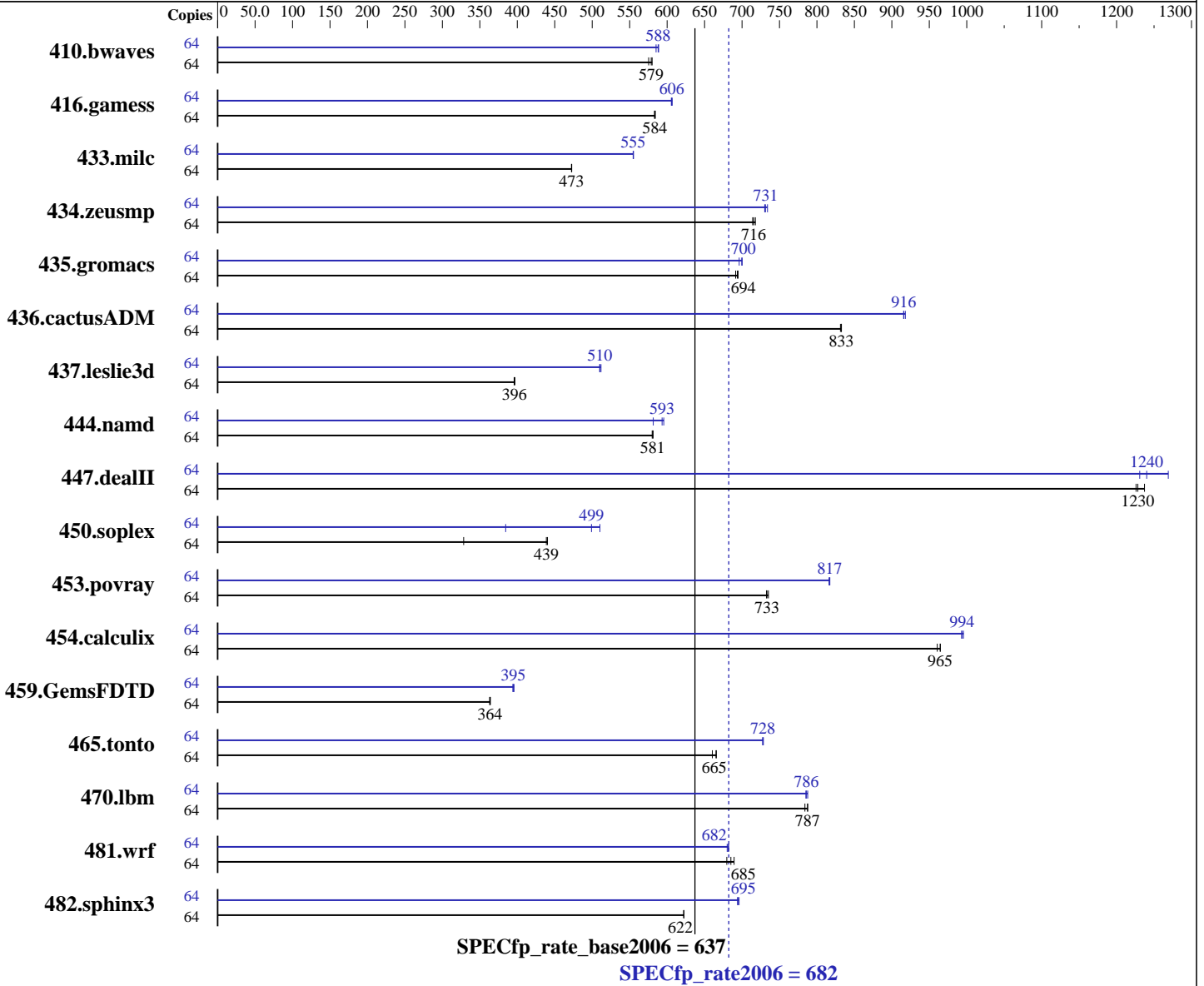
Test date: Jan-2012

Test sponsor: ACTION S.A.

Hardware Availability: Nov-2011

Tested by: ACTION S.A.

Software Availability: Jul-2011



### Hardware

CPU Name: AMD Opteron 6272  
 CPU Characteristics: AMD Turbo CORE technology up to 3.00 GHz  
 CPU MHz: 2100  
 FPU: Integrated  
 CPU(s) enabled: 64 cores, 4 chips, 16 cores/chip  
 CPU(s) orderable: 1,2,4 chips

Continued on next page

### Software

Operating System: Red Hat Enterprise Linux Server release 6.1, Kernel 2.6.32-131.0.15.el6.x86\_64  
 Compiler: C/C++/Fortran: Version 4.2.5.2 of x86 Open64 Compiler Suite (from AMD)  
 Auto Parallel: No  
 File System: ext3  
 System State: Run level 3 (Full multiuser with network)  
 Base Pointers: 64-bit  
 Peak Pointers: 32/64-bit

Continued on next page



# SPEC CFP2006 Result

Copyright 2006-2014 Standard Performance Evaluation Corporation

## ACTION S.A.

SPECfp\_rate2006 = **682**

ACTINA SOLAR 410 A2 (AMD Opteron 6272)

SPECfp\_rate\_base2006 = **637**

CPU2006 license: 9008

Test date: Jan-2012

Test sponsor: ACTION S.A.

Hardware Availability: Nov-2011

Tested by: ACTION S.A.

Software Availability: Jul-2011

Primary Cache: 512 KB I on chip per chip,  
64 KB I shared / 2 cores;  
16 KB D on chip per core

Secondary Cache: 16 MB I+D on chip per chip, 2 MB shared / 2 cores

L3 Cache: 16 MB I+D on chip per chip, 8 MB shared / 8 cores

Other Cache: None

Memory: 256 GB (32 x 8 GB 2Rx4 PC3-10600R-9, ECC)

Disk Subsystem: 1 x 2 TB SATA, 7200 RPM

Other Hardware: None

Other Software: None

## Results Table

Benchmark	Base								Peak							
	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio		
410.bwaves	64	1512	575	<u>1503</u>	<u>579</u>	1500	580	64	1478	589	1486	585	<u>1479</u>	<u>588</u>		
416.gamess	64	2145	584	<u>2147</u>	<u>584</u>	2149	583	64	2069	606	2065	607	<u>2068</u>	<u>606</u>		
433.milc	64	<u>1243</u>	<u>473</u>	1243	473	1244	472	64	1059	555	1058	555	<u>1059</u>	<u>555</u>		
434.zeusmp	64	<u>814</u>	<u>716</u>	811	718	815	714	64	<u>796</u>	<u>731</u>	793	734	798	730		
435.gromacs	64	<u>659</u>	<u>694</u>	661	692	658	695	64	656	696	653	700	<u>653</u>	<u>700</u>		
436.cactusADM	64	<u>919</u>	<u>833</u>	920	831	918	833	64	833	918	<u>835</u>	<u>916</u>	835	916		
437.leslie3d	64	1520	396	1516	397	<u>1519</u>	<u>396</u>	64	<u>1179</u>	<u>510</u>	1176	512	1180	510		
444.namd	64	885	580	<u>884</u>	<u>581</u>	883	581	64	883	581	<u>865</u>	<u>593</u>	862	596		
447.dealII	64	597	1230	<u>596</u>	<u>1230</u>	592	1240	64	595	1230	577	1270	<u>590</u>	<u>1240</u>		
450.soplex	64	1625	328	1212	440	<u>1216</u>	<u>439</u>	64	1388	385	<u>1070</u>	<u>499</u>	1046	510		
453.povray	64	463	735	465	733	<u>464</u>	<u>733</u>	64	417	817	<u>417</u>	<u>817</u>	417	816		
454.calculix	64	<u>547</u>	<u>965</u>	547	965	550	961	64	530	996	532	993	<u>531</u>	<u>994</u>		
459.GemsFDTD	64	<u>1867</u>	<u>364</u>	1865	364	1870	363	64	<u>1721</u>	<u>395</u>	1716	396	1723	394		
465.tonto	64	<u>947</u>	<u>665</u>	954	660	946	666	64	864	728	866	728	<u>865</u>	<u>728</u>		
470.lbm	64	<u>1117</u>	<u>787</u>	1122	784	1116	788	64	1116	788	<u>1119</u>	<u>786</u>	1120	785		
481.wrf	64	1037	689	1052	680	<u>1043</u>	<u>685</u>	64	1048	682	1051	680	<u>1048</u>	<u>682</u>		
482.sphinx3	64	<u>2004</u>	<u>622</u>	2004	623	2005	622	64	1797	694	1792	696	<u>1796</u>	<u>695</u>		

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.  
See the configuration file for details.

## Operating System Notes

'ulimit -s unlimited' was used to set environment stack size  
'ulimit -l 2097152' was used to set environment locked pages in memory limit

Set transparent\_hugepage=never as a boot parameter in /boot/grub/menu.lst  
Continued on next page



# SPEC CFP2006 Result

Copyright 2006-2014 Standard Performance Evaluation Corporation

**ACTION S.A.**

**SPECfp\_rate2006 = 682**

**ACTINA SOLAR 410 A2 (AMD Opteron 6272)**

**SPECfp\_rate\_base2006 = 637**

**CPU2006 license:** 9008

**Test date:** Jan-2012

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

**Hardware Availability:** Nov-2011

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

**Software Availability:** Jul-2011

## Operating System Notes (Continued)

Set kernel/randomize\_va\_space=0 in /etc/sysctl.conf

Set vm/nr\_hugepages=57344 in /etc/sysctl.conf  
mount -t hugetlbfs nodev /mnt/hugepages

## General Notes

Environment variables set by runspec before the start of the run:

HUGETLB\_LIMIT = "896"

LD\_LIBRARY\_PATH = "/cpu2006.1.2/amd1104-rate-libs-revB/32:/cpu2006.1.2/amd1104-rate-libs-revB/64"

The x86 Open64 Compiler Suite is only available from (and supported by) AMD at <http://developer.amd.com/cpu/open64>

Binaries were compiled on a system with 2x AMD Opteron 6282SE chips + 64GB Memory using RHEL 6.1

## Base Compiler Invocation

C benchmarks:  
openc

C++ benchmarks:  
openCC

Fortran benchmarks:  
openf95

Benchmarks using both Fortran and C:  
openc openf95

## 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 -fno-second-underscore  
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

Continued on next page



# SPEC CFP2006 Result

Copyright 2006-2014 Standard Performance Evaluation Corporation

**ACTION S.A.**

**SPECfp\_rate2006 = 682**

**ACTINA SOLAR 410 A2 (AMD Opteron 6272)**

**SPECfp\_rate\_base2006 = 637**

**CPU2006 license:** 9008

**Test date:** Jan-2012

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

**Hardware Availability:** Nov-2011

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

**Software Availability:** Jul-2011

## Base Portability Flags (Continued)

470.lbm: -DSPEC\_CPU\_LP64  
 481.wrf: -DSPEC\_CPU\_LINUX -DSPEC\_CPU\_CASE\_FLAG -DSPEC\_CPU\_LP64  
           -fno-second-underscore  
 482.sphinx3: -DSPEC\_CPU\_LP64

## Base Optimization Flags

C benchmarks:

-march=bdver1 -Ofast -OPT:malloc\_alg=1 -HP:bd=2m:heap=2m  
 -IPA:plimit=8000 -IPA:small\_pu=100 -mso

C++ benchmarks:

-march=bdver1 -Ofast -static -CG:load\_exe=0 -OPT:malloc\_alg=1  
 -INLINE:aggressive=on -HP:bd=2m:heap=2m -D\_\_OPEN64\_FAST\_SET

Fortran benchmarks:

-march=bdver1 -Ofast -LNO:blocking=off -OPT:rsqrt=2  
 -OPT:unroll\_size=256 -HP:bd=2m:heap=2m -mso

Benchmarks using both Fortran and C:

-march=bdver1 -Ofast -OPT:malloc\_alg=1 -HP:bd=2m:heap=2m  
 -IPA:plimit=8000 -IPA:small\_pu=100 -mso -LNO:blocking=off  
 -OPT:rsqrt=2 -OPT:unroll\_size=256

## Peak Compiler Invocation

C benchmarks:

openc

C++ benchmarks:

openCC

Fortran benchmarks:

openf95

Benchmarks using both Fortran and C:

openc openf95

## Peak Portability Flags

410.bwaves: -DSPEC\_CPU\_LP64  
 416.gamess: -DSPEC\_CPU\_LP64  
 433.milc: -DSPEC\_CPU\_LP64

Continued on next page



# SPEC CFP2006 Result

Copyright 2006-2014 Standard Performance Evaluation Corporation

**ACTION S.A.**

**SPECfp\_rate2006 = 682**

**ACTINA SOLAR 410 A2 (AMD Opteron 6272)**

**SPECfp\_rate\_base2006 = 637**

**CPU2006 license:** 9008

**Test date:** Jan-2012

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

**Hardware Availability:** Nov-2011

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

**Software Availability:** Jul-2011

## Peak Portability Flags (Continued)

```

434.zeusmp: -DSPEC_CPU_LP64
435.gromacs: -DSPEC_CPU_LP64
436.cactusADM: -DSPEC_CPU_LP64 -fno-second-underscore
437.leslie3d: -DSPEC_CPU_LP64
444.namd: -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_LINUX -DSPEC_CPU_CASE_FLAG -DSPEC_CPU_LP64
      -fno-second-underscore
482.sphinx3: -DSPEC_CPU_LP64

```

## Peak Optimization Flags

C benchmarks:

```

433.milc: -march=bdver1 -Ofast -CG:movnti=1 -CG:locs_best=on
      -HP:bdt=2m:heap=2m -IPA:plimit=7000 -IPA:callee_limit=1200
      -OPT:struct_array_copy=2 -OPT:alias=field_sensitive -mso

470.lbm: -march=bdver1 -Ofast -CG:cmp_peep=on
      -OPT:unroll_times_max=8 -OPT:unroll_size=256
      -OPT:unroll_level=2 -OPT:keep_ext=on -HP:bdt=2m:heap=2m
      -IPA:plimit=8000 -IPA:small_pu=100 -mso

482.sphinx3: -march=bdver1 -fb_create fbdata(pass 1)
      -fb_opt fbdata(pass 2) -Ofast -OPT:malloc_alg=2
      -CG:cmp_peep=on -CG:local_sched_alg=2 -INLINE:aggressive=on
      -LNO:prefetch=2 -LNO:prefetch_ahead=4 -mso

```

C++ benchmarks:

```

444.namd: -march=bdver1 -fb_create fbdata(pass 1)
      -fb_opt fbdata(pass 2) -Ofast -LNO:ignore_feedback=off
      -CG:local_sched_alg=2 -CG:load_exe=0 -OPT:unroll_size=256
      -fno-exceptions -HP:bdt=2m:heap=2m

447.dealII: -march=bdver1 -Ofast -D__OPEN64_FAST_SET -static
      -INLINE:aggressive=on -LNO:opt=0 -LNO:simd=0
      -fno-emit-exceptions -m32 -OPT:unroll_times_max=8
      -OPT:unroll_size=256 -OPT:unroll_level=2 -HP:bdt=2m:heap=2m
      -GRA:unspill=on -CG:cmp_peep=on -CG:movext_icmp=off
      -TENV:frame_pointer=off

450.soplex: -march=bdver1 -fb_create fbdata(pass 1)
      -fb_opt fbdata(pass 2) -O3 -INLINE:aggressive=on -OPT:RO=1
      -OPT:IEEE_arith=3 -OPT:IEEE_NaN_Inf=off

```

Continued on next page



# SPEC CFP2006 Result

Copyright 2006-2014 Standard Performance Evaluation Corporation

**ACTION S.A.**

**SPECfp\_rate2006 = 682**

**ACTINA SOLAR 410 A2 (AMD Opteron 6272)**

**SPECfp\_rate\_base2006 = 637**

**CPU2006 license:** 9008

**Test date:** Jan-2012

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

**Hardware Availability:** Nov-2011

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

**Software Availability:** Jul-2011

## Peak Optimization Flags (Continued)

450.soplex (continued):

-OPT:fold\_unsigned\_relops=on -fno-exceptions -m32  
-HP:bdt=2m:heap=2m -WOPT:sib=on

453.povray:

-march=bdver1 -fb\_create fbdata(pass 1)  
-fb\_opt fbdata(pass 2) -Ofast -CG:pre\_local\_sched=off  
-INLINE:aggressive=on -HP:bd=2m:heap=2m -OPT:transform=2  
-OPT:alias=disjoint -WOPT:aggcm=0

Fortran benchmarks:

410.bwaves:

-march=bdver1 -fb\_create fbdata(pass 1)  
-fb\_opt fbdata(pass 2) -Ofast -OPT:Ofast -OPT:treeheight=on  
-LNO:blocking=off -LNO:ignore\_feedback=off -LNO:fu=4  
-LNO:loop\_model\_simd=on -LNO:simd\_rm\_unity\_remainder=on  
-WOPT:aggstr=0 -HP:bdt=2m:heap=2m -CG:cmp\_peep=on

416.gamess:

-march=bdver1 -fb\_create fbdata(pass 1)  
-fb\_opt fbdata(pass 2) -O3 -LNO:fu=6 -LNO:blocking=0  
-LNO:simd=0 -OPT:Ofast -OPT:ro=3 -OPT:unroll\_size=256  
-OPT:unroll\_times\_max=2 -CG:local\_sched\_alg=1  
-HP:bdt=2m:heap=2m -WOPT:sib=on

434.zeusmp:

-march=bdver1 -Ofast -LNO:blocking=off -LNO:interchange=off  
-HP:bdt=2m:heap=2m

437.leslie3d:

-march=bdver1 -Ofast -CG:pre\_minreg\_level=2 -LNO:simd=0  
-LNO:fusion=2 -HP:bdt=2m:heap=2m -mso

459.GemsFDTD:

-march=bdver1 -Ofast -OPT:unroll\_size=0 -LNO:fission=2  
-CG:load\_exe=0 -CG:local\_sched\_alg=2 -HP

465.tonto:

-march=bdver1 -Ofast -OPT:alias=no\_f90\_pointer\_alias  
-LNO:blocking=off -CG:load\_exe=1 -IPA:plimit=525  
-HP:bdt=2m:heap=2m

Benchmarks using both Fortran and C:

435.gromacs:

-march=bdver1 -fb\_create fbdata(pass 1)  
-fb\_opt fbdata(pass 2) -Ofast -OPT:rsqrt=2  
-HP:bdt=2m:heap=2m

436.cactusADM:

-march=bdver1 -fb\_create fbdata(pass 1)  
-fb\_opt fbdata(pass 2) -Ofast -LNO:blocking=off  
-LNO:prefetch=2 -HP -CG:locs\_shallow\_depth=1 -CG:load\_exe=0  
-WOPT:sib=on

454.calculix:

-march=bdver1 -Ofast -OPT:unroll\_size=256  
-GRA:optimize\_boundary=on -HP:bdt=2m:heap=2m

Continued on next page



# SPEC CFP2006 Result

Copyright 2006-2014 Standard Performance Evaluation Corporation

**ACTION S.A.**

**SPECfp\_rate2006 = 682**

**ACTINA SOLAR 410 A2 (AMD Opteron 6272)**

**SPECfp\_rate\_base2006 = 637**

**CPU2006 license:** 9008

**Test date:** Jan-2012

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

**Hardware Availability:** Nov-2011

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

**Software Availability:** Jul-2011

## Peak Optimization Flags (Continued)

```
481.wrf: -march=bdver1 -Ofast -LNO:blocking=off -LANG:copyinout=off  
-IPA:callee_limit=5000 -GRA:prioritize_by_density=on  
-CG:load_exe=1 -HP -WOPT:sib=on
```

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

<http://www.spec.org/cpu2006/flags/x86-open64-425-flags-rate-revB.20120202.html>

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

<http://www.spec.org/cpu2006/flags/x86-open64-425-flags-rate-revB.20120202.xml>

SPEC and SPECfp are registered trademarks of the Standard Performance Evaluation Corporation. All other brand and product names appearing in this result are trademarks or registered trademarks of their respective holders.

For questions about this result, please contact the tester.  
For other inquiries, please contact [webmaster@spec.org](mailto:webmaster@spec.org).

Tested with SPEC CPU2006 v1.2.  
Report generated on Thu Jul 24 03:44:20 2014 by SPEC CPU2006 PS/PDF formatter v6932.  
Originally published on 15 February 2012.