SPEC® CFP2006 Result
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ACTION S.A.

ACTINA SOLAR 200 X5 (Intel Xeon E5-2650 v2, 2.60 GHz)

$SPECfp^®\_rate2006 =$ 556

$SPECfp\_rate\_base2006 =$ 546

CPU2006 license: 9008	**Test date:** Aug-2014
Test sponsor: ACTION S.A.	**Hardware Availability:** Oct-2013
Tested by: ACTION S.A.	**Software Availability:** Sep-2013

Copies

410.bwaves 32 501

416.gamess 32 544
            32 536

433.milc   32 477
            32 477

434.zeusmp 32 650

435.gromacs 32 675
            32 664

436.cactusADM 32 606

437.leslie3d 16 360
             32 327

444.namd   32 428
            32 424

447.dealII 32 952

450.soplex 16 372
            32 344

453.povray 32 859
            32 741

454.calculix 32 810

459.GemsFDTD 32 305

465.tonto   32 628
            32 601

470.lbm   32 606

481.wrf   32 593
            32 592

482.sphinx3 32 520
            32 564

SPECfp_rate_base2006 = 546

SPECfp_rate2006 = 556

Hardware

CPU Name:	Intel Xeon E5-2650 v2
CPU Characteristics:	Intel Turbo Boost Technology up to 3.40 GHz
CPU MHz:	2600
FPU:	Integrated
CPU(s) enabled:	16 cores, 2 chips, 8 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:	Red Hat Enterprise Linux Server release 6.4 (Santiago) 2.6.32-358.11.1.el6.x86_64
Compiler:	C/C++: Version 14.0.0.080 of Intel C++ Studio XE for Linux; Fortran: Version 14.0.0.080 of Intel Fortran Studio XE for Linux
Auto Parallel:	No
File System:	ext4

Continued on next page

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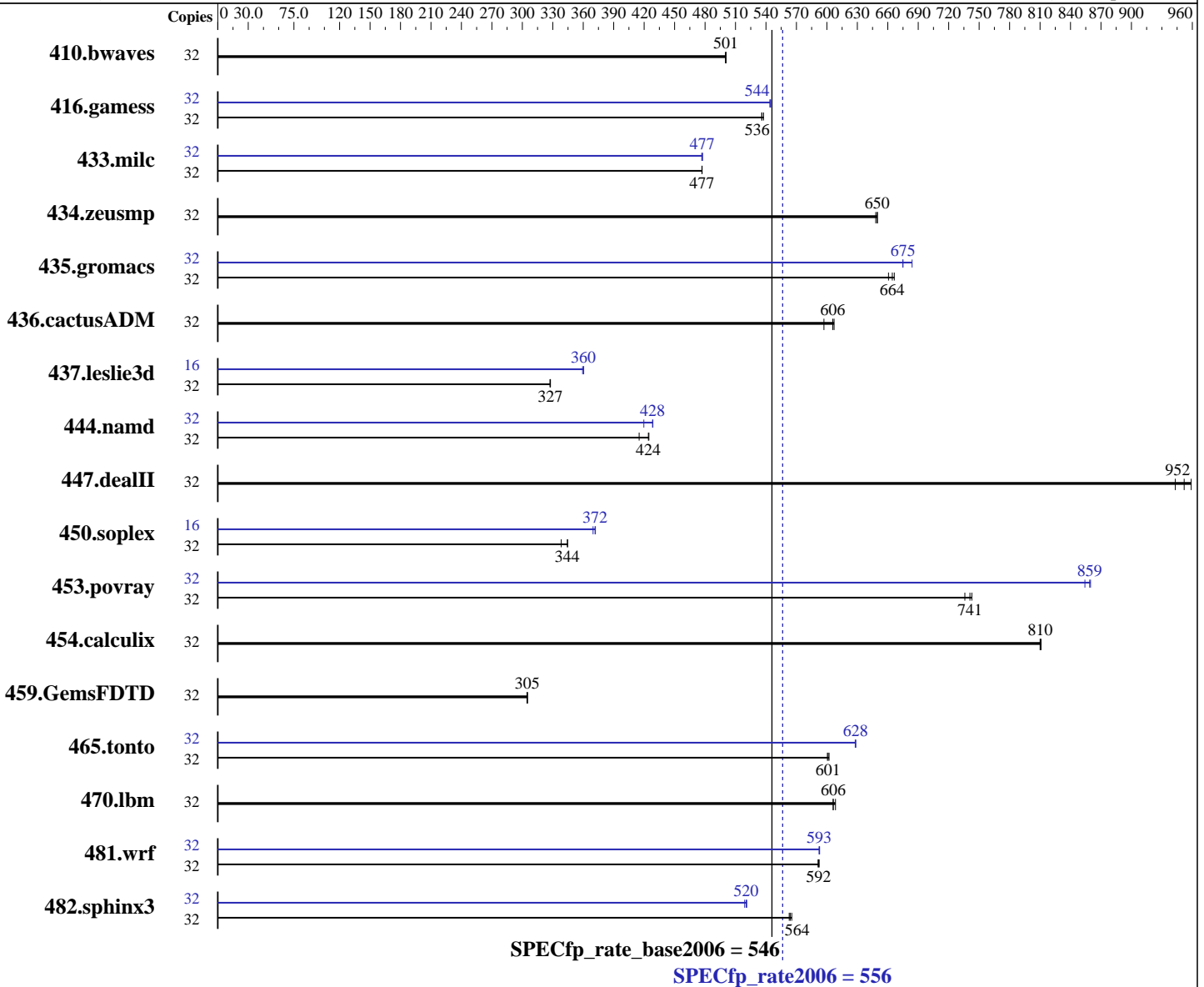
SPECfp_rate_base2006 = 546

CPU2006 license: 9008
Test sponsor: ACTION S.A.
Tested by: ACTION S.A.

Test date: Aug-2014
Hardware Availability: Oct-2013
Software Availability: Sep-2013

L3 Cache:	20 MB I+D on chip per chip
Other Cache:	None
Memory:	128 GB (16 x 8 GB 2Rx4 PC3-14900R-13, ECC)
Disk Subsystem:	1 x 240 GB SATA II SSD
Other Hardware:	None

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

Results Table

Benchmark	Base Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Peak Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
410.bwaves	32	870	500	869	501	**869**	**501**	32	870	500	869	501	**869**	**501**
416.gamess	32	1165	538	**1169**	**536**	1169	536	32	1152	544	1150	545	**1151**	**544**
433.milc	32	**616**	**477**	616	477	616	477	32	**615**	**477**	615	477	616	477
434.zeusmp	32	448	650	**448**	**650**	449	648	32	448	650	**448**	**650**	449	648
435.gromacs	32	**344**	**664**	346	661	343	666	32	**338**	**675**	339	675	334	684
436.cactusADM	32	630	607	**631**	**606**	640	597	32	630	607	**631**	**606**	640	597
437.leslie3d	32	919	327	**918**	**327**	918	328	16	419	359	417	360	**417**	**360**
444.namd	32	**605**	**424**	618	415	604	425	32	**599**	**428**	611	420	599	429
447.dealII	32	382	959	**385**	**952**	388	943	32	382	959	**385**	**952**	388	943
450.soplex	32	789	338	**775**	**344**	774	345	16	361	370	**359**	**372**	359	372
453.povray	32	229	743	**230**	**741**	231	736	32	198	860	199	854	**198**	**859**
454.calculix	32	326	811	326	810	**326**	**810**	32	326	811	326	810	**326**	**810**
459.GemsFDTD	32	1113	305	1115	305	**1114**	**305**	32	1113	305	1115	305	**1114**	**305**
465.tonto	32	524	601	523	602	**524**	**601**	32	501	628	**501**	**628**	501	628
470.lbm	32	723	608	**725**	**606**	725	606	32	723	608	**725**	**606**	725	606
481.wrf	32	**604**	**592**	603	592	605	591	32	603	592	603	593	**603**	**593**
482.sphinx3	32	1108	563	**1106**	**564**	1103	565	32	1197	521	1202	519	**1198**	**520**

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

Submit Notes

The numactl mechanism was used to bind copies to processors. The config file option 'submit' was used to generate numactl 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"

Platform Notes

Bios Settings:
System Acoustic and Performance Configuration = Performance

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Platform Notes (Continued)

```
Select Memory RAS Configuration = Maximum Performance
Intel(R) Turbo Boost Technology = Enabled
Processor C3 = Disabled
Processor C6 = Disabled

Sysinfo program /cpu2006.1.2/config/sysinfo.rev6818
$Rev: 6818 $ $Date:: 2012-07-17 #$ e86d102572650a6e4d596a3cee98f191
running on localhost.localdomain Thu Aug  7 04:40:58 2014

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 E5-2650 v2 @ 2.60GHz
      2 "physical id"s (chips)
      32 "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 : 8
      siblings  : 16
      physical 0: cores 0 1 2 3 4 5 6 7
      physical 1: cores 0 1 2 3 4 5 6 7
   cache size : 20480 KB

From /proc/meminfo
   MemTotal:       132125592 kB
   HugePages_Total:        0
   Hugepagesize:        2048 kB

/usr/bin/lsb_release -d
   Red Hat Enterprise Linux Server release 6.4 (Santiago)

From /etc/*release* /etc/*version*
   redhat-release: Red Hat Enterprise Linux Server release 6.4 (Santiago)
   system-release: Red Hat Enterprise Linux Server release 6.4 (Santiago)
   system-release-cpe: cpe:/o:redhat:enterprise_linux:6server:ga:server

uname -a:
   Linux localhost.localdomain 2.6.32-358.11.1.el6.x86_64 #1 SMP Tue Nov 19
   17:43:04 CET 2013 x86_64 x86_64 x86_64 GNU/Linux

run-level 3 Aug 6 17:37

SPEC is set to: /cpu2006.1.2
   Filesystem     Type    Size   Used Avail Use% Mounted on
   /dev/sda1      ext4    193G    84G  100G  46% /

Additional information from dmidecode:
   BIOS Intel Corp. SE5C600.86B.02.03.0003.041920141333 04/19/2014
   Memory:
```

Continued on next page

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Platform Notes (Continued)

```
     16x    8 GB
     16x Hynix HMT31GR7EFR4C-RD 8 GB 1867 MHz 2 rank

  (End of data from sysinfo program)
  dmidecode does not properly display info for memory modules
  16 modules of 8 GB were used to run the test (128 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"

 Transparent Huge Pages enabled with:
 echo always > /sys/kernel/mm/redhat_transparent_hugepage/enabled
 Filesystem page cache cleared with:
 echo 1>        /proc/sys/vm/drop_caches
 runspec command invoked through numactl i.e.:
 numactl --interleave=all runspec <etc>
 Binaries compiled on a system with 2x Xeon E5-2650 v2 chips + 256 GB memory
 using RedHat EL 6.4
```

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.dealII: -DSPEC_CPU_LP64
```

Continued on next page

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Tested by: ACTION S.A.

Test date: Aug-2014

Hardware Availability: Oct-2013

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Base Portability Flags (Continued)

```
    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 -opt-prefetch -auto-p32 -ansi-alias
-opt-mem-layout-trans=3
```

C++ benchmarks:

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

Fortran benchmarks:

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

Benchmarks using both Fortran and C:

```
-xAVX -ipo -O3 -no-prec-div -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
```

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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
 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
```

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) -opt-mem-layout-trans=3(pass 2)
               -prof-use(pass 2) -auto-ilp32

     470.lbm: basepeak = yes

   482.sphinx3: -xAVX -ipo -O3 -no-prec-div -opt-mem-layout-trans=3
               -unroll2
```

C++ benchmarks:

```
     444.namd: -xAVX(pass 2) -prof-gen(pass 1) -ipo(pass 2) -O3(pass 2)
               -no-prec-div(pass 2) -opt-mem-layout-trans=3(pass 2)
               -prof-use(pass 2) -fno-alias -auto-ilp32

    447.dealII: basepeak = yes

    450.soplex: -xAVX(pass 2) -prof-gen(pass 1) -ipo(pass 2) -O3(pass 2)
               -no-prec-div(pass 2) -opt-mem-layout-trans=3(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) -opt-mem-layout-trans=3(pass 2)
               -prof-use(pass 2) -unroll4 -ansi-alias
```

Fortran benchmarks:

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Tested by:	ACTION S.A.	**Software Availability:**	Sep-2013

Peak Optimization Flags (Continued)

410.bwaves: basepeak = yes

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-

434.zeusmp: basepeak = yes

437.leslie3d: -xAVX -ipo -O3 -no-prec-div -opt-prefetch

459.GemsFDTD: basepeak = yes

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) -opt-mem-layout-trans=3(pass 2)
-prof-use(pass 2) -opt-prefetch -auto-ilp32

436.cactusADM: basepeak = yes

454.calculix: basepeak = yes

481.wrf: -xAVX -ipo -O3 -no-prec-div -auto-ilp32

The flags files that were used to format this result can be browsed at
http://www.spec.org/cpu2006/flags/Intel-ic14.0-official-linux64.20140128.html
http://www.spec.org/cpu2006/flags/ACTION.SA-Platform-Flags-RevB-apr-2014-For-Intel-Platform.html

You can also download the XML flags sources by saving the following links:
http://www.spec.org/cpu2006/flags/Intel-ic14.0-official-linux64.20140128.xml
http://www.spec.org/cpu2006/flags/ACTION.SA-Platform-Flags-RevB-apr-2014-For-Intel-Platform.xml

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

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