# SPEC® CFP2006 Result
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## Acer Incorporated

### Altos R360 F2 (Intel Xeon E5-2660)

$SPECfp^®\_rate2006 = 460$

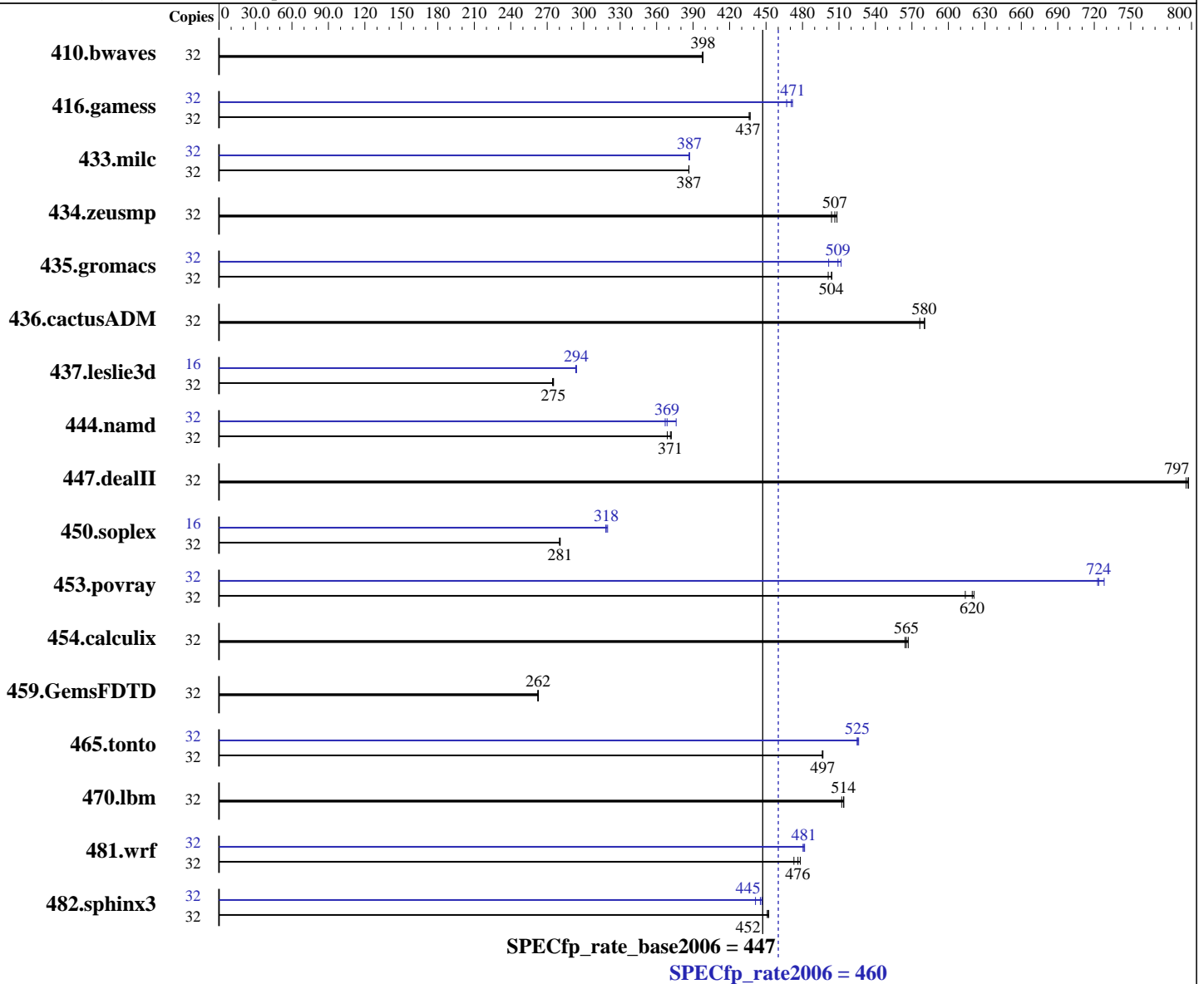$SPECfp\_rate\_base2006 = 447$

**CPU2006 license:** 97
**Test sponsor:** Acer Incorporated
**Tested by:** Acer Incorporated

**Test date:** May-2013
**Hardware Availability:** May-2013
**Software Availability:** Feb-2013

| Copies | | |
|---|---|---|
| 410.bwaves | 32 | 398 |
| 416.gamess | 32 | 471 |
| | 32 | 437 |
| 433.milc | 32 | 387 |
| | 32 | 387 |
| 434.zeusmp | 32 | 507 |
| 435.gromacs | 32 | 509 |
| | 32 | 504 |
| 436.cactusADM | 32 | 580 |
| 437.leslie3d | 16 | 294 |
| | 32 | 275 |
| 444.namd | 32 | 369 |
| | 32 | 371 |
| 447.dealII | 32 | 797 |
| 450.soplex | 16 | 318 |
| | 32 | 281 |
| 453.povray | 32 | 724 |
| | 32 | 620 |
| 454.calculix | 32 | 565 |
| 459.GemsFDTD | 32 | 262 |
| 465.tonto | 32 | 525 |
| | 32 | 497 |
| 470.lbm | 32 | 514 |
| 481.wrf | 32 | 481 |
| | 32 | 476 |
| 482.sphinx3 | 32 | 445 |
| | 32 | 452 |

**SPECfp_rate_base2006 = 447**

**SPECfp_rate2006 = 460**

## Hardware

CPU Name: Intel Xeon E5-2660
CPU Characteristics: Intel Turbo Boost Technology up to 3.00 GHz
CPU MHz: 2200
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 6.3 (Santiago)
2.6.32-279.el6.x86_64
Compiler: C/C++: Version 13.0.0.133 of Intel C++ Studio XE for Linux;
Fortran: Version 13.0.0.133 of Intel Fortran Studio XE for Linux
Auto Parallel: No
File System: ext4
**Continued on next page**

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| | |
|---|---|
| L3 Cache: | 20 MB I+D on chip per chip |
| Other Cache: | None |
| Memory: | 128 GB (16 x 8 GB 2Rx4 PC3-12800R-11, ECC) |
| Disk Subsystem: | 1 x 300 GB SAS, 10K RPM |
| 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 | 1094 | 398 | **1092** | **398** | 1092 | 398 | 32 | 1094 | 398 | **1092** | **398** | 1092 | 398 |
| 416.gamess | 32 | **1435** | **437** | 1434 | 437 | 1437 | 436 | 32 | **1331** | **471** | 1328 | 472 | 1342 | 467 |
| 433.milc | 32 | **760** | **387** | 760 | 387 | 760 | 386 | 32 | 760 | 387 | 759 | 387 | **759** | **387** |
| 434.zeusmp | 32 | **575** | **507** | 578 | 504 | 573 | 508 | 32 | **575** | **507** | 578 | 504 | 573 | 508 |
| 435.gromacs | 32 | 453 | 504 | **454** | **504** | 456 | 501 | 32 | 446 | 512 | 456 | 502 | **449** | **509** |
| 436.cactusADM | 32 | 663 | 576 | 659 | 581 | **659** | **580** | 32 | 663 | 576 | 659 | 581 | **659** | **580** |
| 437.leslie3d | 32 | **1094** | **275** | 1096 | 274 | 1093 | 275 | 16 | **512** | **294** | 513 | 293 | 511 | 294 |
| 444.namd | 32 | 696 | 369 | **691** | **371** | 690 | 372 | 32 | 699 | 367 | 682 | 376 | **696** | **369** |
| 447.dealII | 32 | 459 | 798 | 460 | 795 | **459** | **797** | 32 | 459 | 798 | 460 | 795 | **459** | **797** |
| 450.soplex | 32 | 953 | 280 | **951** | **281** | 951 | 281 | 16 | 417 | 320 | 419 | 318 | **419** | **318** |
| 453.povray | 32 | **275** | **620** | 274 | 621 | 277 | 614 | 32 | 236 | 723 | 234 | 728 | **235** | **724** |
| 454.calculix | 32 | 468 | 564 | 466 | 567 | **467** | **565** | 32 | 468 | 564 | 466 | 567 | **467** | **565** |
| 459.GemsFDTD | 32 | 1295 | 262 | 1292 | 263 | **1293** | **262** | 32 | 1295 | 262 | 1292 | 263 | **1293** | **262** |
| 465.tonto | 32 | 634 | 497 | **634** | **497** | 634 | 496 | 32 | **599** | **525** | 598 | 526 | 600 | 525 |
| 470.lbm | 32 | **856** | **514** | 855 | 514 | 858 | 512 | 32 | **856** | **514** | 855 | 514 | 858 | 512 |
| 481.wrf | 32 | 747 | 478 | 756 | 473 | **751** | **476** | 32 | 744 | 480 | 742 | 482 | **743** | **481** |
| 482.sphinx3 | 32 | 1379 | 452 | 1383 | 451 | **1381** | **452** | 32 | 1413 | 441 | 1397 | 447 | **1401** | **445** |

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

Sysinfo program /usr/cpu2006/config/sysinfo.rev6818
$Rev: 6818 $ $Date:: 2012-07-17 #$ e86d102572650a6e4d596a3cee98f191
running on altosr380f2 Mon May 27 22:42:09 2013

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Altos R360 F2 (Intel Xeon E5-2660)

SPECfp_rate2006 =   460

SPECfp_rate_base2006 =   447

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## Platform Notes (Continued)

```
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 E5-2660 0 @ 2.20GHz
      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:       132113952 kB
   HugePages_Total:       0
   Hugepagesize:       2048 kB

/usr/bin/lsb_release -d
   Red Hat Enterprise Linux Server release 6.3 (Santiago)

From /etc/*release* /etc/*version*
   redhat-release: Red Hat Enterprise Linux Server release 6.3 (Santiago)
   system-release: Red Hat Enterprise Linux Server release 6.3 (Santiago)
   system-release-cpe: cpe:/o:redhat:enterprise_linux:6server:ga:server

uname -a:
   Linux altosr380f2 2.6.32-279.el6.x86_64 #1 SMP Wed Jun 13 18:24:36 EDT 2012
   x86_64 x86_64 x86_64 GNU/Linux

run-level 3 May 27 09:49

SPEC is set to: /usr/cpu2006
   Filesystem     Type    Size  Used Avail Use% Mounted on
   /dev/mapper/vg_altosr380f2-lv_root
                  ext4    270G  145G  111G  57% /

Additional information from dmidecode:
  BIOS Intel Corp. SE5C600.86B.01.06.0002.110120121539 11/01/2012
  Memory:
   16x    8 GB
   16x Hynix HMT31GR7CFR4C-PB 8 GB 1600 MHz 2 rank
   8x NO DIMM NO DIMM

(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 = "/usr/cpu2006/libs/32:/usr/cpu2006/libs/64:/usr/cpu2006/sh"

 Binaries compiled on a system with 1x Core i7-860 CPU + 8GB
 memory using RHEL5.5
 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>
 Altos R360 F2 and Altos R380 F2 are electronically equivalent.
 This result was measured on Altos R380 F2.
```

## 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
    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
```

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# Base Optimization Flags

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

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
```

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## Peak Portability Flags (Continued)

```
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) -static -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:

```
  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- -static

  434.zeusmp: basepeak = yes

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

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# Peak Optimization Flags (Continued)

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 -static -auto-ilp32

436.cactusADM: basepeak = yes

454.calculix: basepeak = yes

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

The flags files that were used to format this result can be browsed at
http://www.spec.org/cpu2006/flags/Intel-ic13-official-linux64.html
http://www.spec.org/cpu2006/flags/Acer-Platform-Settings-V1.2-revA.20130423.html

You can also download the XML flags sources by saving the following links:
http://www.spec.org/cpu2006/flags/Intel-ic13-official-linux64.xml
http://www.spec.org/cpu2006/flags/Acer-Platform-Settings-V1.2-revA.20130423.xml

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

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