# SPEC® CFP2006 Result

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## Acer Incorporated

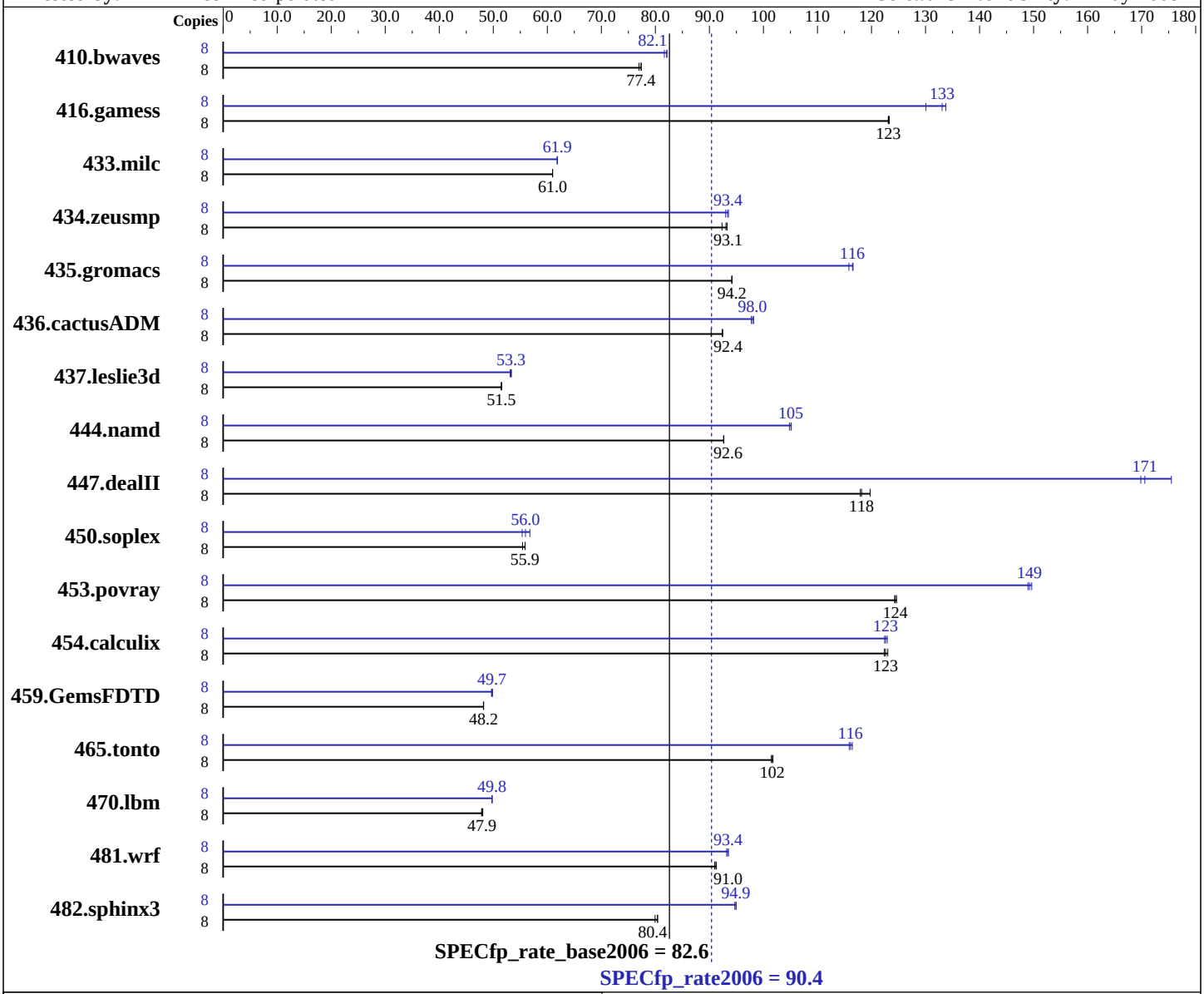
## Acer Altos G5450 (AMD Opteron 2360 SE)

SPECfp®_rate2006 = 90.4

SPECfp_rate_base2006 = 82.6

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

**Test date:** Jun-2008
**Hardware Availability:** May-2008
**Software Availability:** May-2008




### Hardware

| | |
|---|---|
| CPU Name: | AMD Opteron 2360 SE |
| CPU Characteristics: | |
| CPU MHz: | 2500 |
| FPU: | Integrated |
| CPU(s) enabled: | 8 cores, 2 chips, 4 cores/chip |
| CPU(s) orderable: | 1,2 chips |
| Primary Cache: | 64 KB I + 64 KB D on chip per core |
| Secondary Cache: | 512 KB I+D on chip per core |

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### Software

| | |
|---|---|
| Operating System: | SuSE Linux Enterprise Server 10 (x86_64) SP1, Kernel 2.6.16.46-0.12-smp |
| Compiler: | PGI Server Complete Version 7.2<br>PathScale Compiler Suite Version 3.1 |
| Auto Parallel: | No |
| File System: | ReiserFS |
| System State: | Run level 3 (Full multiuser with network) |
| Base Pointers: | 64-bit |
| Peak Pointers: | 32/64-bit |

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L3 Cache: 2 MB I+D on chip per chip
Other Cache: None
Memory: 16 GB (8x2GB, DDR2-667, CL5, Reg, Dual Rank)
Disk Subsystem: 1x160GB 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 | 8 | 1413 | 77.0 | 1405 | 77.4 | **1405** | **77.4** | 8 | **1324** | **82.1** | 1323 | 82.2 | 1332 | 81.7 |
| 416.gamess | 8 | 1271 | 123 | **1272** | **123** | 1273 | 123 | 8 | **1177** | **133** | 1171 | 134 | 1204 | 130 |
| 433.milc | 8 | 1204 | 61.0 | 1205 | 61.0 | **1205** | **61.0** | 8 | 1187 | 61.9 | 1188 | 61.8 | **1187** | **61.9** |
| 434.zeusmp | 8 | 788 | 92.3 | 781 | 93.3 | **782** | **93.1** | 8 | **780** | **93.4** | 783 | 93.0 | 778 | 93.5 |
| 435.gromacs | 8 | 606 | 94.2 | 607 | 94.2 | **607** | **94.2** | 8 | 493 | 116 | 490 | 117 | **490** | **116** |
| 436.cactusADM | 8 | **1035** | **92.4** | 1059 | 90.3 | 1034 | 92.5 | 8 | **976** | **98.0** | 974 | 98.2 | 978 | 97.8 |
| 437.leslie3d | 8 | 1460 | 51.5 | **1460** | **51.5** | 1460 | 51.5 | 8 | 1409 | 53.4 | **1411** | **53.3** | 1416 | 53.1 |
| 444.namd | 8 | **693** | **92.6** | 693 | 92.6 | 692 | 92.7 | 8 | 612 | 105 | 610 | 105 | **611** | **105** |
| 447.dealII | 8 | **775** | **118** | 764 | 120 | 776 | 118 | 8 | 539 | 170 | 521 | 175 | **536** | **171** |
| 450.soplex | 8 | 1204 | 55.4 | 1194 | 55.9 | **1194** | **55.9** | 8 | **1192** | **56.0** | 1206 | 55.3 | 1175 | 56.8 |
| 453.povray | 8 | **342** | **124** | 341 | 125 | 342 | 124 | 8 | **285** | **149** | 286 | 149 | 284 | 150 |
| 454.calculix | 8 | 536 | 123 | **538** | **123** | 539 | 122 | 8 | 539 | 122 | 537 | 123 | **538** | **123** |
| 459.GemsFDTD | 8 | 1762 | 48.2 | **1761** | **48.2** | 1760 | 48.2 | 8 | 1709 | 49.7 | **1706** | **49.7** | 1702 | 49.9 |
| 465.tonto | 8 | 776 | 101 | 773 | 102 | **774** | **102** | 8 | 679 | 116 | **678** | **116** | 676 | 116 |
| 470.lbm | 8 | 2298 | 47.8 | **2293** | **47.9** | 2287 | 48.1 | 8 | 2208 | 49.8 | **2209** | **49.8** | 2209 | 49.8 |
| 481.wrf | 8 | **982** | **91.0** | 979 | 91.3 | 982 | 91.0 | 8 | 959 | 93.2 | 955 | 93.5 | **957** | **93.4** |
| 482.sphinx3 | 8 | 1950 | 79.9 | 1939 | 80.4 | **1939** | **80.4** | 8 | 1642 | 94.9 | **1643** | **94.9** | 1647 | 94.7 |

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

## Operating System Notes

```
'numactl' was used to bind copies to the cores
Environment variable PGI_HUGE_PAGES set to 150
'ulimit -s unlimited' was used to set environment stack size
'ulimit -l 2457600' was used to set environment locked pages in memory quantity
Set vm/nr_hugepages=150 in /etc/sysctl.conf
mount -t hugetlbfs nodev /mnt/hugepages
```

## General Notes

```
This result was measured on the Acer Altos R5250
The Altos R5250 and Altos G5450 are electronically equivalent.
```

## Base Compiler Invocation

C benchmarks:
pgcc

C++ benchmarks:
pgcpp

Fortran benchmarks:
pgf95

Benchmarks using both Fortran and C:
pgcc pgf95

## 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 -Mnomain
436.cactusADM: -DSPEC_CPU_LP64 -Mnomain
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 -Mnomain
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:
-fast -Mipa=fast -Mipa=inline -Mfprelaxed -Msmartalloc=huge:150
-tp barcelona-64 -Bstatic_pgi

C++ benchmarks:
-fast -Mipa=fast -Mipa=inline -Mfprelaxed -Msmartalloc=huge:150
--zc_eh -tp barcelona-64 -Bstatic_pgi

Fortran benchmarks:
-fast -Mipa=fast -Mipa=inline -Mfprelaxed -Msmartalloc=huge:150
-tp barcelona-64 -Bstatic_pgi

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## Base Optimization Flags (Continued)

Benchmarks using both Fortran and C:
`-fast -Mipa=fast -Mipa=inline -Mfprelaxed -Msmartalloc=huge:150 -tp barcelona-64 -Bstatic_pgi`

## Base Other Flags

C benchmarks:
`-w -Mipa=jobs:4`

C++ benchmarks:
`-w -Mipa=jobs:4`

Fortran benchmarks:
`-w -Mipa=jobs:4`

Benchmarks using both Fortran and C:
`-w -Mipa=jobs:4`

## Peak Compiler Invocation

C benchmarks (except as noted below):
`pathcc`

433.milc: `pgcc`

C++ benchmarks (except as noted below):
`pathCC`

444.namd: `pgcpp`

Fortran benchmarks (except as noted below):
`pathf95`

410.bwaves: `pgf95`

434.zeusmp: `pgf95`

Benchmarks using both Fortran and C (except as noted below):
`pgcc pgf95`

436.cactusADM: `pathcc pathf95`

481.wrf: `pathcc pathf95`

## 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 -Mnomain
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 -Mnomain
459.GemsFDTD: -DSPEC_CPU_LP64
465.tonto: -DSPEC_CPU_LP64
470.lbm: -DSPEC_CPU_LP64
481.wrf: -DSPEC_CPU_LP64 -DSPEC_CPU_LINUX -fno-second-underscore
482.sphinx3: -DSPEC_CPU_LP64

## Peak Optimization Flags

C benchmarks:

433.milc: -fastsse -Msmartalloc=huge:150 -Msafeptr -Mfprelaxed
-Mipa=inline -Mipa=arg -Mipa=const -Mipa=ptr -Mipa=shape
-tp barcelona-64 -Bstatic_pgi

470.lbm: -march=barcelona -Ofast -m3dnow

482.sphinx3: -march=barcelona -Ofast

C++ benchmarks:

444.namd: -Mpfi(pass 1) -Mipa=fast(pass 2) -Mipa=inline(pass 2)
-Mpfo(pass 2) -fast -Mfprelaxed -Msmartalloc=huge:150
--zc_eh -Mnodepchk -Munroll=n:4 -Munroll=m:8
-tp barcelona-64 -Bstatic_pgi

447.dealII: -march=barcelona -Ofast -static -INLINE:aggressive=on
-OPT:malloc_alg=1 -m32 -fno-exceptions

450.soplex: -march=barcelona -fb_create fbdata(pass 1)
-fb_opt fbdata(pass 2) -m32 -O3 -TENV:frame_pointer=off
-LNO:prefetch=1

453.povray: -march=barcelona -fb_create fbdata(pass 1)
-fb_opt fbdata(pass 2) -Ofast -CG:load_exe=0

Fortran benchmarks:

Continued on next page

# Peak Optimization Flags (Continued)

410.bwaves: `-Mpfi`(pass 1) `-Mipa=fast`(pass 2) `-Mipa=inline`(pass 2) `-Mpfo`(pass 2) `-fastsse -Mfprelaxed -Msmartalloc -Mprefetch=distance:12 -Mprefetch=nta -tp barcelona-64 -Bstatic_pgi`

416.gamess: `-march=barcelona -fb_create fbdata`(pass 1) `-fb_opt fbdata`(pass 2) `-O2 -OPT:Ofast -OPT:ro=3 -OPT:unroll_size=256`

434.zeusmp: `-fastsse -Mfprelaxed -Msmartalloc=huge:150 -Mipa=fast -Mipa=inline -tp barcelona-64 -Bstatic_pgi`

437.leslie3d: `-march=barcelona -Ofast -m3dnow -OPT:unroll_size=256 -CG:load_exe=0 -OPT:malloc_alg=1`

459.GemsFDTD: `-march=barcelona -Ofast -LNO:fission=2 -LNO:simd=2 -OPT:malloc_alg=1`

465.tonto: `-march=barcelona -Ofast -OPT:malloc_alg=1 -OPT:alias=no_f90_pointer_alias -LNO:blocking=off -CG:load_exe=1 -IPA:plimit=525`

Benchmarks using both Fortran and C:

435.gromacs: `-fast -Mfpapprox=rsqrt -Mipa=fast -Mipa=inline -Mfprelaxed -Msmartalloc=huge:150 -tp barcelona-64 -Bstatic_pgi`

436.cactusADM: `-march=barcelona -fb_create fbdata`(pass 1) `-fb_opt fbdata`(pass 2) `-Ofast -WOPT:aggstr=0`

454.calculix: `-fastsse -Mfprelaxed -Msmartalloc=huge:150 -Mipa=fast -Mipa=inline -tp barcelona-64 -Bstatic_pgi`

481.wrf: `-march=barcelona -Ofast -LNO:blocking=off -LNO:prefetch_ahead=10 -OPT:malloc_alg=1 -m3dnow -LANG:copyinout=off -IPA:callee_limit=5000`

# Peak Other Flags

C benchmarks:

433.milc: `-w -Mipa=jobs:4`

C++ benchmarks:

444.namd: `-w -Mipa=jobs:4`(pass 2)

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# Peak Other Flags (Continued)

Fortran benchmarks:

410.bwaves: `-w -Mipa=jobs:4`(pass 2)

434.zeusmp: `-w -Mipa=jobs:4`

Benchmarks using both Fortran and C:

435.gromacs: `-w -Mipa=jobs:4`

454.calculix: `-w -Mipa=jobs:4`

The flags file that was used to format this result can be browsed at
`http://www.spec.org/cpu2006/flags/amd123GH-flags.20090713.01.html`

You can also download the XML flags source by saving the following link:
`http://www.spec.org/cpu2006/flags/amd123GH-flags.20090713.01.xml`


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