



# SPEC<sup>®</sup> CFP2006 Result

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## Acer Incorporated

### SPECfp<sup>®</sup>\_rate2006 = 486

### Gateway GR585 F1 (AMD Opteron 6132 HE)

### SPECfp\_rate\_base2006 = 438

CPU2006 license: 97

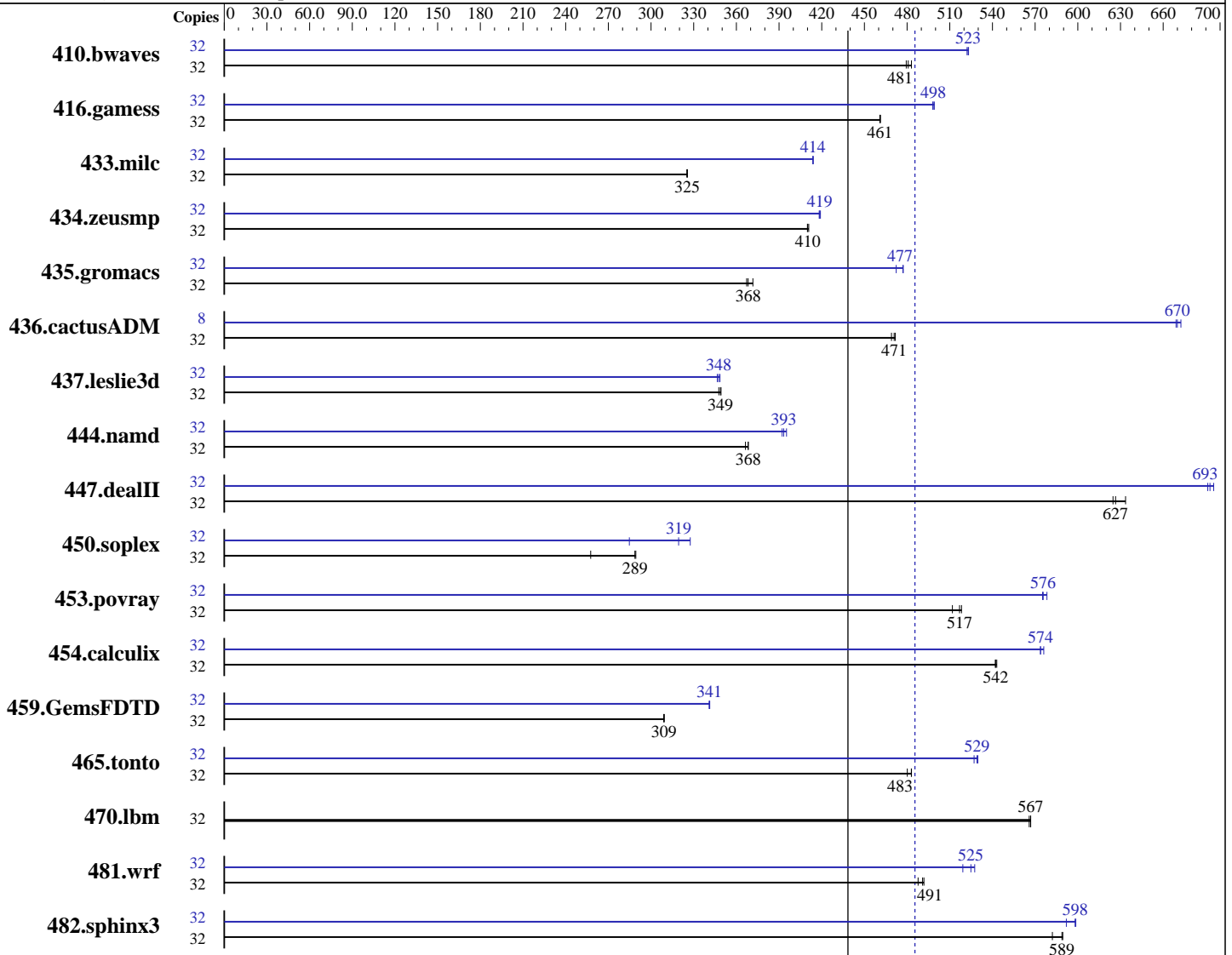
Test date: May-2011

Test sponsor: Acer Incorporated

Hardware Availability: Feb-2011

Tested by: Acer Incorporated

Software Availability: Jul-2010



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#### Hardware

CPU Name: AMD Opteron 6132 HE  
 CPU Characteristics:  
 CPU MHz: 2200  
 FPU: Integrated  
 CPU(s) enabled: 32 cores, 4 chips, 8 cores/chip  
 CPU(s) orderable: 2,4 chips  
 Primary Cache: 64 KB I + 64 KB D on chip per core  
 Secondary Cache: 512 KB I+D on chip per core

#### Software

Operating System: SUSE Linux Enterprise Server 11 (x86\_64) SP1, Kernel 2.6.32.12-0.7-default  
 Compiler: x86 Open64 4.2.4 Compiler Suite (from AMD)  
 Auto Parallel: Yes  
 File System: ext3  
 System State: Run level 3 (multi-user)  
 Base Pointers: 64-bit  
 Peak Pointers: 32/64-bit  
 Other Software: None

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L3 Cache: 12 MB I+D on chip per chip, 6 MB shared / 4 cores  
Other Cache: None  
Memory: 128 GB (32 x 4 GB 2Rx8 PC3-10600R-9, ECC)  
Disk Subsystem: 1 x 500 GB SATA, 7200 RPM  
Other Hardware: None

## Results Table

| Benchmark     | Base   |             |            |             |            |             |            | Peak   |            |            |             |            |             |            |
|---------------|--------|-------------|------------|-------------|------------|-------------|------------|--------|------------|------------|-------------|------------|-------------|------------|
|               | Copies | Seconds     | Ratio      | Seconds     | Ratio      | Seconds     | Ratio      | Copies | Seconds    | Ratio      | Seconds     | Ratio      | Seconds     | Ratio      |
| 410.bwaves    | 32     | <b>905</b>  | <b>481</b> | 907         | 479        | 900         | 483        | 32     | 833        | 522        | <b>832</b>  | <b>523</b> | 831         | 523        |
| 416.gamess    | 32     | 1358        | 461        | 1360        | 461        | <b>1359</b> | <b>461</b> | 32     | 1258       | 498        | 1255        | 499        | <b>1257</b> | <b>498</b> |
| 433.milc      | 32     | 902         | 326        | <b>903</b>  | <b>325</b> | 903         | 325        | 32     | 710        | 414        | 710         | 414        | <b>710</b>  | <b>414</b> |
| 434.zeusmp    | 32     | 709         | 411        | <b>710</b>  | <b>410</b> | 710         | 410        | 32     | <b>696</b> | <b>419</b> | 695         | 419        | 696         | 418        |
| 435.gromacs   | 32     | 622         | 367        | <b>620</b>  | <b>368</b> | 615         | 372        | 32     | <b>479</b> | <b>477</b> | 484         | 472        | 479         | 477        |
| 436.cactusADM | 32     | <b>812</b>  | <b>471</b> | 815         | 469        | 811         | 472        | 8      | 143        | 669        | 142         | 672        | <b>143</b>  | <b>670</b> |
| 437.leslie3d  | 32     | <b>862</b>  | <b>349</b> | 865         | 348        | 861         | 349        | 32     | 868        | 347        | <b>866</b>  | <b>348</b> | 863         | 348        |
| 444.namd      | 32     | 700         | 366        | <b>697</b>  | <b>368</b> | 697         | 368        | 32     | 654        | 392        | <b>653</b>  | <b>393</b> | 649         | 395        |
| 447.dealII    | 32     | 578         | 634        | 586         | 625        | <b>584</b>  | <b>627</b> | 32     | 526        | 696        | <b>528</b>  | <b>693</b> | 530         | 691        |
| 450.soplex    | 32     | 1036        | 258        | <b>925</b>  | <b>289</b> | 922         | 289        | 32     | 937        | 285        | <b>836</b>  | <b>319</b> | 815         | 328        |
| 453.povray    | 32     | 333         | 512        | <b>329</b>  | <b>517</b> | 328         | 518        | 32     | 296        | 575        | 294         | 578        | <b>296</b>  | <b>576</b> |
| 454.calculix  | 32     | 486         | 543        | 487         | 542        | <b>487</b>  | <b>542</b> | 32     | <b>460</b> | <b>574</b> | 458         | 576        | 460         | 574        |
| 459.GemsFDTD  | 32     | <b>1098</b> | <b>309</b> | 1098        | 309        | 1099        | 309        | 32     | 995        | 341        | <b>996</b>  | <b>341</b> | 996         | 341        |
| 465.tonto     | 32     | 656         | 480        | <b>652</b>  | <b>483</b> | 652         | 483        | 32     | <b>595</b> | <b>529</b> | 594         | 530        | 597         | 527        |
| 470.lbm       | 32     | 777         | 566        | 776         | 567        | <b>776</b>  | <b>567</b> | 32     | 777        | 566        | 776         | 567        | <b>776</b>  | <b>567</b> |
| 481.wrf       | 32     | 733         | 488        | <b>728</b>  | <b>491</b> | 727         | 492        | 32     | 688        | 519        | 678         | 528        | <b>681</b>  | <b>525</b> |
| 482.sphinx3   | 32     | 1071        | 582        | <b>1059</b> | <b>589</b> | 1058        | 589        | 32     | 1054       | 592        | <b>1043</b> | <b>598</b> | 1042        | 599        |

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 vm/nr\_hugepages=28672 in /etc/sysctl.conf  
mount -t hugetlbfs nodev /mnt/hugepages



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## General Notes

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

HUGETLB\_LIMIT = "896"

LD\_LIBRARY\_PATH = "/usr/cpu2006/amd1002-rate-libs-revC/64:/usr/cpu2006/amd1002-rate-libs-revC/32"

OMP\_NUM\_THREADS = "4"

The x86 Open64 Compiler Suite is only available from (and supported by) AMD at

<http://developer.amd.com/cpu/open64>

Binaries were compiled on SLES10 SP2 with binutils 2.18

This result was measured on the Gateway GR585 F1.

The Acer AR585 F1 and Gateway GR585 F1 are electronically equivalent.

## Base Compiler Invocation

C benchmarks:

opencc

C++ benchmarks:

openCC

Fortran benchmarks:

openf95

Benchmarks using both Fortran and C:

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



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## Base Optimization Flags

C benchmarks:

-march=barcelona -mso -Ofast -OPT:malloc\_alg=1 -HP:bdt=2m

C++ benchmarks:

-march=barcelona -mso -Ofast -static -INLINE:aggressive=on  
-OPT:malloc\_alg=1 -HP:bdt=2m

Fortran benchmarks:

-march=barcelona -mso -Ofast -HP

Benchmarks using both Fortran and C:

-march=barcelona -mso -Ofast -OPT:malloc\_alg=1 -HP:bdt=2m -HP

## Peak Compiler Invocation

C benchmarks:

opencc

C++ benchmarks:

openCC

Fortran benchmarks:

openf95

Benchmarks using both Fortran and C:

opencc openf95

## 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  
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\_LP64 -DSPEC\_CPU\_LINUX -DSPEC\_CPU\_CASE\_FLAG  
-fno-second-underscore  
482.sphinx3: -DSPEC\_CPU\_LP64



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## Peak Optimization Flags

### C benchmarks:

433.milc: -march=barcelona -mso -Ofast -CG:movnti=1  
-CG:local\_sched\_alg=1 -CG:locs\_shallow\_depth=1  
-HP:bdt=2m:heap=2m -LNO:prefetch=3

470.lbm: basepeak = yes

482.sphinx3: -march=barcelona -mso -fb\_create fbdata(pass 1)  
-fb\_opt fbdata(pass 2) -Ofast -OPT:malloc\_alg=2  
-CG:sse\_cse\_regs=0 -CG:locs\_shallow\_depth=1 -CG:cmp\_peep=on  
-CG:local\_sched\_alg=1 -INLINE:aggressive=on

### C++ benchmarks:

444.namd: -march=barcelona -mso -fb\_create fbdata(pass 1)  
-fb\_opt fbdata(pass 2) -Ofast -LNO:ignore\_feedback=off  
-CG:local\_sched\_alg=2 -CG:load\_exe=0 -CG:compute\_to=on  
-OPT:unroll\_size=256 -fno-exceptions -HP:bdt=2m:heap=2m

447.deallI: -march=barcelona -mso -Ofast -static -INLINE:aggressive=on  
-LNO:opt=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 -TENV:frame\_pointer=off

450.soplex: -march=barcelona -mso -fb\_create fbdata(pass 1)  
-fb\_opt fbdata(pass 2) -O3 -INLINE:aggressive=on  
-OPT:IEEE\_arith=3 -OPT:IEEE\_NaN\_Inf=off  
-OPT:fold\_unsigned\_relops=on -OPT:malloc\_alg=1  
-CG:load\_exe=0 -fno-exceptions -m32 -HP:bdt=2m

453.povray: -march=barcelona -mso -fb\_create fbdata(pass 1)  
-fb\_opt fbdata(pass 2) -Ofast -INLINE:aggressive=on

### Fortran benchmarks:

410.bwaves: -march=barcelona -mso -O3 -OPT:Ofast -OPT:treeheight=on  
-LNO:blocking=off -LNO:prefetch\_ahead=5  
-LNO:ignore\_feedback=off -WOPT:aggstr=0 -HP:bdt=2m:heap=2m  
-CG:cmp\_peep=on

416.gamess: -march=barcelona -mso -fb\_create fbdata(pass 1)  
-fb\_opt fbdata(pass 2) -O3 -LNO:fu=6 -LNO:blocking=0  
-LNO:prefetch=0 -OPT:Ofast -OPT:ro=3 -OPT:unroll\_size=256  
-HP:bdt=2m:heap=2m

434.zeusmp: -march=barcelona -mso -Ofast -LNO:blocking=off  
-LNO:interchange=off -OPT:treeheight=on -OPT:unroll\_size=256  
-CG:cmp\_peep=on -GRA:prioritize\_by\_density=on -HP

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## Peak Optimization Flags (Continued)

437.leslie3d: -march=barcelona -mso -Ofast -HP:bdt=2m:heap=2m

459.GemsFDTD: -march=barcelona -mso -Ofast -LNO:fission=2  
-LNO:prefetch\_ahead=1 -CG:load\_exe=0 -CG:local\_sched\_alg=1  
-HP

465.tonto: -march=barcelona -mso -Ofast  
-OPT:alias=no\_f90\_pointer\_alias -LNO:blocking=off  
-CG:load\_exe=1 -IPA:plimit=525 -HP

Benchmarks using both Fortran and C:

435.gromacs: -march=barcelona -mso -Ofast -OPT:rsqrt=2  
-HP:bdt=2m:heap=2m

436.cactusADM: -march=barcelona -mso -fb\_create fbdata(pass 1)  
-fb\_opt fbdata(pass 2) -Ofast -apo -LNO:prefetch\_ahead=1  
-HP:bdt=2m:heap=2m -LANG:heap\_allocation\_threshold=100

454.calculix: -march=barcelona -mso -Ofast -CG:load\_exe=0  
-CG:ptr\_load\_use=0 -CG:local\_sched\_alg=2 -CG:compute\_to=on  
-LNO:prefetch\_ahead=30 -WOPT:unroll=2  
-GRA:optimize\_boundary=on -HP:bdt=2m:heap=2m

481.wrf: -march=barcelona -mso -Ofast -LNO:blocking=off  
-LNO:prefetch\_ahead=10 -LANG:copyinout=off  
-IPA:callee\_limit=5000 -GRA:prioritize\_by\_density=on -m3dnow  
-HP

The flags files that were used to format this result can be browsed at

<http://www.spec.org/cpu2006/flags/x86-open64-424-flags-rate-revC.20100901.html>

<http://www.spec.org/cpu2006/flags/amd-platform-rate-revC.html>

You can also download the XML flags sources by saving the following links:

<http://www.spec.org/cpu2006/flags/x86-open64-424-flags-rate-revC.20100901.xml>

<http://www.spec.org/cpu2006/flags/amd-platform-rate-revC.xml>

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

Tested with SPEC CPU2006 v1.1.

Report generated on Wed Jul 23 22:01:40 2014 by SPEC CPU2006 PS/PDF formatter v6932.

Originally published on 5 July 2011.