



# SPEC<sup>®</sup> CFP2006 Result

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## Acer Incorporated

### SPECfp<sup>®</sup>\_rate2006 = 763

## Acer AR585 F1 (AMD Opteron 6348)

### SPECfp\_rate\_base2006 = 690

CPU2006 license: 97

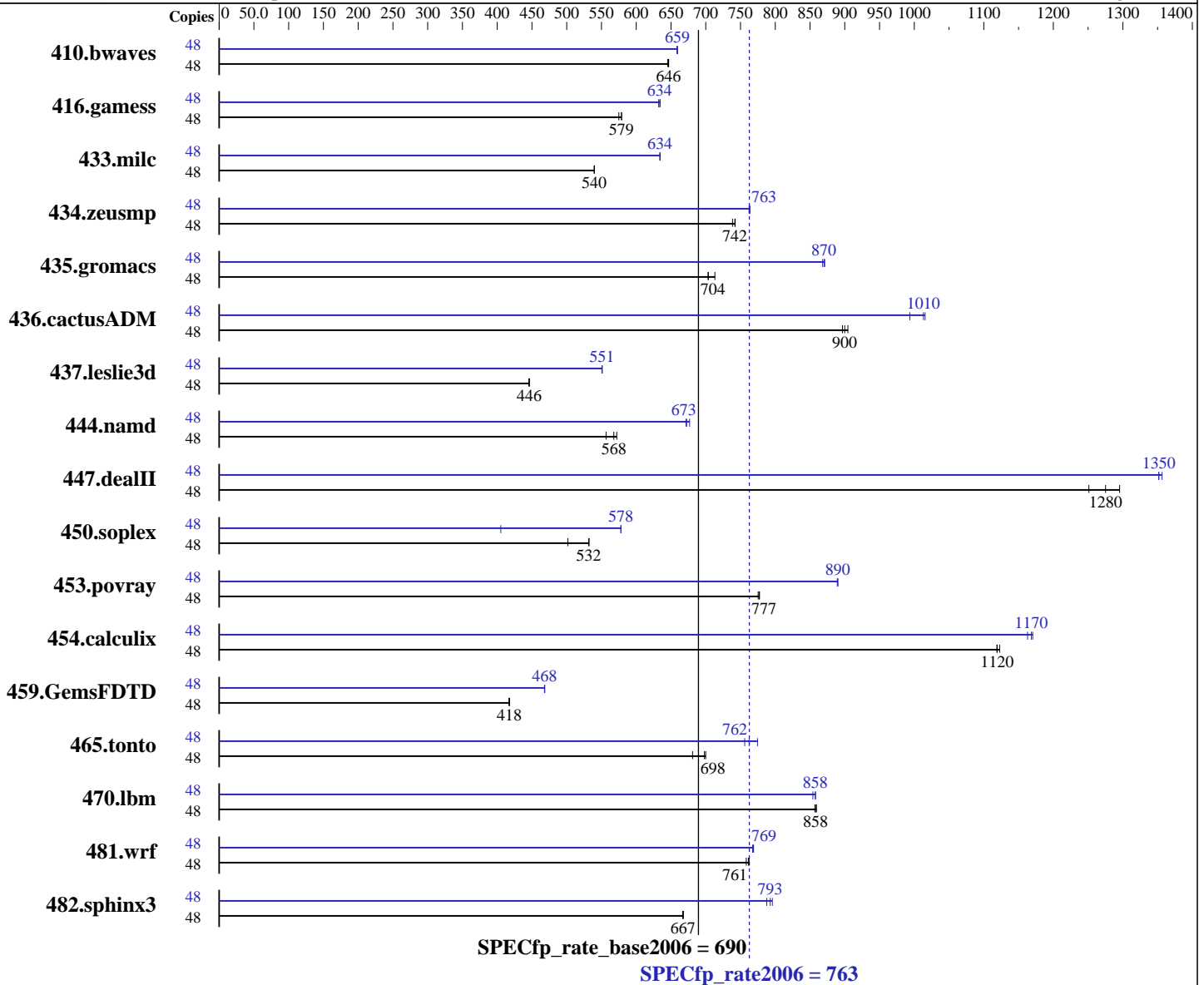
Test sponsor: Acer Incorporated

Tested by: Acer Incorporated

Test date: May-2013

Hardware Availability: Nov-2012

Software Availability: Aug-2012



### Hardware

CPU Name: AMD Opteron 6348  
 CPU Characteristics: AMD Turbo CORE technology up to 3.40 GHz  
 CPU MHz: 2800  
 FPU: Integrated  
 CPU(s) enabled: 48 cores, 4 chips, 12 cores/chip  
 CPU(s) orderable: 2,4 chips

Continued on next page

### Software

Operating System: Red Hat Enterprise Linux Server release 6.3, Kernel 2.6.32-279.el6.x86\_64  
 Compiler: C/C++/Fortran: Version 4.5.2 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



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Primary Cache: 384 KB I on chip per chip,  
64 KB I shared / 2 cores;  
16 KB D on chip per core

Secondary Cache: 12 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 / 6 cores

Other Cache: None

Memory: 256 GB (32 x 8 GB 2Rx4 PC3-12800R-11, ECC)

Disk Subsystem: 1 x 500 GB 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	48	1011	645	<u>1009</u>	<u>646</u>	1009	647	48	989	659	991	659	<u>990</u>	<u>659</u>		
416.gamess	48	1624	579	1635	575	<u>1624</u>	<u>579</u>	48	1481	634	1487	632	<u>1483</u>	<u>634</u>		
433.milc	48	816	540	816	540	<u>816</u>	<u>540</u>	48	695	634	<u>695</u>	<u>634</u>	695	634		
434.zeusmp	48	591	739	588	742	<u>589</u>	<u>742</u>	48	572	764	<u>573</u>	<u>763</u>	573	762		
435.gromacs	48	481	713	487	703	<u>487</u>	<u>704</u>	48	395	868	393	871	<u>394</u>	<u>870</u>		
436.cactusADM	48	634	904	640	897	<u>637</u>	<u>900</u>	48	<u>566</u>	<u>1010</u>	565	1020	577	994		
437.leslie3d	48	1013	445	1011	446	<u>1011</u>	<u>446</u>	48	819	551	819	551	<u>819</u>	<u>551</u>		
444.namd	48	692	557	673	572	<u>678</u>	<u>568</u>	48	573	672	569	677	<u>572</u>	<u>673</u>		
447.dealII	48	439	1250	<u>431</u>	<u>1280</u>	424	1300	48	406	1350	405	1360	<u>406</u>	<u>1350</u>		
450.soplex	48	798	502	<u>753</u>	<u>532</u>	752	532	48	988	405	<u>693</u>	<u>578</u>	693	578		
453.povray	48	329	777	329	775	<u>329</u>	<u>777</u>	48	287	889	287	890	<u>287</u>	<u>890</u>		
454.calculix	48	<u>354</u>	<u>1120</u>	354	1120	353	1120	48	338	1170	341	1160	<u>339</u>	<u>1170</u>		
459.GemsFDTD	48	1222	417	1219	418	<u>1219</u>	<u>418</u>	48	1087	468	1088	468	<u>1088</u>	<u>468</u>		
465.tonto	48	<u>677</u>	<u>698</u>	675	700	694	681	48	625	756	610	774	<u>619</u>	<u>762</u>		
470.lbm	48	<u>769</u>	<u>858</u>	770	857	768	859	48	772	854	769	858	<u>769</u>	<u>858</u>		
481.wrf	48	707	758	<u>704</u>	<u>761</u>	703	762	48	<u>698</u>	<u>769</u>	697	769	699	767		
482.sphinx3	48	<u>1402</u>	<u>667</u>	1401	668	1403	667	48	<u>1180</u>	<u>793</u>	1188	788	1176	796		

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  
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**CPU2006 license:** 97

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## Operating System Notes (Continued)

```
Set vm/nr_hugepages=43008 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 = "/usr/cpu2006/amd1206-rate-libs-revA/32:/usr/cpu2006/amd1206-rate-libs-revA/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 6386SE chips + 128GB Memory using RHEL 6.3

## 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.deallI: -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
```

Continued on next page

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Page 3



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## Base Portability Flags (Continued)

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:

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

C++ benchmarks:

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

Fortran benchmarks:

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

Benchmarks using both Fortran and C:

-Ofast -OPT:malloc\_alg=1 -HP:bd=2m:heap=2m -IPA:plimit=8000  
-IPA:small\_pu=100 -mso -march=bdver1 -LNO:blocking=off  
-LNO:simd\_peel\_align=on -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  
434.zeusmp: -DSPEC\_CPU\_LP64

Continued on next page



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## Peak Portability Flags (Continued)

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

## Peak Optimization Flags

C benchmarks:

433.milc: -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  
 -march=bdver1

470.lbm: -Ofast -CG:cmp\_peep=on -OPT:keep\_ext=on -HP:bdt=2m:heap=2m  
 -IPA:plimit=8000 -IPA:small\_pu=100 -march=bdver1 -mso

482.sphinx3: -fb\_create fbdata(pass 1) -fb\_opt fbdata(pass 2) -Ofast  
 -m32 -IPA:plimit=1000 -OPT:malloc\_alg=2 -CG:cmp\_peep=on  
 -CG:p2align=0 -CG:load\_exe=1 -CG:dsched=on  
 -INLINE:aggressive=on -LNO:prefetch=2 -LNO:prefetch\_ahead=4  
 -mso -march=bdver2

C++ benchmarks:

444.namd: -Ofast -IPA:plimit=3000 -LNO:ignore\_feedback=off  
 -CG:local\_sched\_alg=0 -CG:load\_exe=0 -OPT:unroll\_size=256  
 -fno-exceptions -HP:bdt=2m:heap=2m -LNO:if\_select\_conv=1  
 -OPT:alias=disjoint -LNO:psimd\_iso\_unroll=ON -march=bdver1

447.dealIII: -Ofast -D\_\_OPEN64\_FAST\_SET -static -INLINE:aggressive=on  
 -LNO:opt=1 -LNO:simd=2 -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  
 -march=bdver1

450.soplex: -fb\_create fbdata(pass 1) -fb\_opt fbdata(pass 2) -O3  
 -LNO:ignore\_feedback=off -INLINE:aggressive=on -OPT:RO=1  
 -OPT:IEEE\_arith=3 -OPT:IEEE\_NaN\_Inf=off  
 -OPT:fold\_unsigned\_relops=on -fno-exceptions -CG:p2align=0  
 -m32 -mno-fma4 -HP:bdt=2m:heap=2m -WOPT:sib=on

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## Peak Optimization Flags (Continued)

450.soplex (continued):

-march=bdver1

453.povray: -fb\_create fbdata(pass 1) -fb\_opt fbdata(pass 2) -Ofast

-CG:pre\_local\_sched=off -CG:p2align=0 -CG:p2align\_split=on

-CG:dsched=on -INLINE:aggressive=on -HP:bd=2m:heap=2m

-OPT:transform=2 -OPT:alias=disjoint -WOPT:aggcm=0

-march=bdver2

Fortran benchmarks:

410.bwaves: -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:bd=2m:heap=2m -CG:cmp\_peep=on -march=bdver1

416.gamess: -fb\_create fbdata(pass 1) -fb\_opt fbdata(pass 2) -Ofast

-LNO:fu=6 -LNO:blocking=0 -LNO:simd=2 -OPT:ro=3

-OPT:recip=on -CG:local\_sched\_alg=1 -HP:bd=2m:heap=2m

-WOPT:sib=on -march=bdver1

434.zeusmp: -fb\_create fbdata(pass 1) -fb\_opt fbdata(pass 2) -Ofast

-LNO:blocking=off -LNO:interchange=off -IPA:plimit=1500

-HP:bd=2m:heap=2m -march=bdver1

437.leslie3d: -Ofast -CG:pre\_minreg\_level=2 -LNO:simd=0 -LNO:fusion=2

-HP:bd=2m:heap=2m -mso -march=bdver1

459.GemsFDTD: -Ofast -IPA:plimit=1500 -OPT:unroll\_size=1024

-OPT:unroll\_times\_max=16 -LNO:fission=2

-CG:local\_sched\_alg=2 -HP -march=bdver1

465.tonto: -Ofast -OPT:alias=no\_f90\_pointer\_alias -LNO:blocking=off

-CG:load\_exe=1 -CG:local\_sched\_alg=3 -IPA:plimit=525

-HP:bd=2m:heap=2m -march=bdver1

Benchmarks using both Fortran and C:

435.gromacs: -Ofast -OPT:rsqrt=2 -HP:bd=2m:heap=2m

-CG:local\_sched\_alg=2 -CG:load\_exe=3 -GRA:unspill=on

-march=bdver1 -LNO:simd=3

436.cactusADM: -fb\_create fbdata(pass 1) -fb\_opt fbdata(pass 2) -Ofast

-LNO:blocking=off -LNO:prefetch=2 -LNO:pf2=0

-LNO:prefetch\_ahead=4 -HP -CG:locs\_shallow\_depth=1

-CG:load\_exe=0 -CG:dsched=on -WOPT:sib=on -march=bdver1

454.calculix: -Ofast -OPT:unroll\_size=256 -OPT:alias=disjoint

-GRA:optimize\_boundary=on -CG:dsched=on -HP:bd=2m:heap=2m

-march=bdver1

Continued on next page

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Page 6



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## Peak Optimization Flags (Continued)

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

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

<http://www.spec.org/cpu2006/flags/x86-open64-452-flags-rate-revA-I.html>

<http://www.spec.org/cpu2006/flags/amd1206-acer-platform-rate-revA-I.html>

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

<http://www.spec.org/cpu2006/flags/x86-open64-452-flags-rate-revA-I.xml>

<http://www.spec.org/cpu2006/flags/amd1206-acer-platform-rate-revA-I.xml>

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

Tested with SPEC CPU2006 v1.2.

Report generated on Thu Jul 24 15:51:22 2014 by SPEC CPU2006 PS/PDF formatter v6932.

Originally published on 18 June 2013.