



# SPEC® CFP2006 Result

Copyright 2006-2014 Standard Performance Evaluation Corporation

Tyan

(Test Sponsor: Advanced Micro Devices)

Tyan YR190-B8228,  
AMD Opteron 4230 HE

SPECfp®2006 = 44.4

SPECfp\_base2006 = 38.9

CPU2006 license: 49

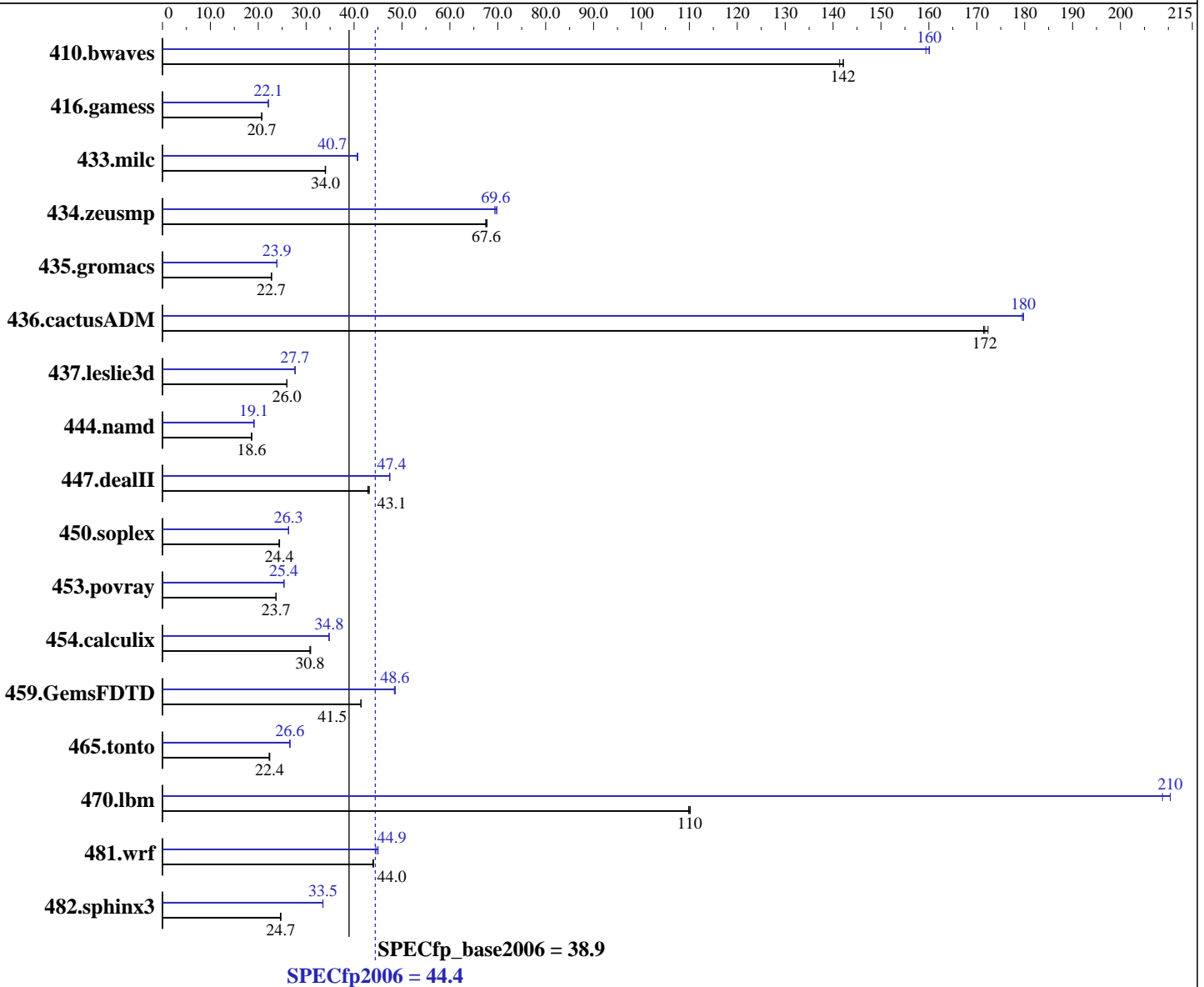
Test sponsor: Advanced Micro Devices

Tested by: Advanced Micro Devices

Test date: Apr-2012

Hardware Availability: Jun-2012

Software Availability: Jul-2011



## Hardware

CPU Name: AMD Opteron 4230 HE  
 CPU Characteristics: AMD Turbo CORE technology up to 3.90 GHz  
 CPU MHz: 2900  
 FPU: Integrated  
 CPU(s) enabled: 12 cores, 2 chips, 6 cores/chip  
 CPU(s) orderable: 1,2 chips

Continued on next page

## Software

Operating System: Red Hat Enterprise Linux Server release 6.1,  
Kernel 2.6.32-131.0.15.el6.x86\_64  
 Compiler: C/C++/Fortran: Version 4.2.5.2 of x86 Open64  
Compiler Suite (from AMD)  
 Auto Parallel: Yes  
 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



# SPEC CFP2006 Result

Copyright 2006-2014 Standard Performance Evaluation Corporation

**Tyan**

(Test Sponsor: Advanced Micro Devices)

Tyan YR190-B8228,  
AMD Opteron 4230 HE

SPECfp2006 = **44.4**

SPECfp\_base2006 = **38.9**

CPU2006 license: 49

Test sponsor: Advanced Micro Devices

Tested by: Advanced Micro Devices

Test date: Apr-2012

Hardware Availability: Jun-2012

Software Availability: Jul-2011

Primary Cache: 192 KB I on chip per chip,  
64 KB I shared / 2 cores;  
16 KB D on chip per core

Secondary Cache: 6 MB I+D on chip per chip, 2 MB shared / 2 cores

L3 Cache: 8 MB I+D on chip per chip

Other Cache: None

Memory: 32 GB (4 x 8 GB 2Rx4 PC3-12800R-11, ECC)

Disk Subsystem: 1 x 128 GB SATA, 7200 RPM

Other Hardware: None

Other Software: None

## Results Table

Benchmark	Base						Peak					
	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
410.bwaves	95.6	142	96.1	141	<b>95.6</b>	<b>142</b>	<b>84.9</b>	<b>160</b>	85.3	159	84.9	160
416.gamess	945	20.7	<b>945</b>	<b>20.7</b>	944	20.7	886	22.1	<b>886</b>	<b>22.1</b>	886	22.1
433.milc	<b>270</b>	<b>34.0</b>	270	34.0	270	34.0	225	40.8	226	40.6	<b>225</b>	<b>40.7</b>
434.zeusmp	134	67.8	135	67.5	<b>135</b>	<b>67.6</b>	130	69.8	<b>131</b>	<b>69.6</b>	131	69.4
435.gromacs	314	22.7	<b>314</b>	<b>22.7</b>	313	22.8	<b>299</b>	<b>23.9</b>	299	23.9	299	23.9
436.cactusADM	69.3	172	69.7	171	<b>69.6</b>	<b>172</b>	66.6	180	<b>66.5</b>	<b>180</b>	66.5	180
437.leslie3d	361	26.0	<b>362</b>	<b>26.0</b>	362	25.9	340	27.7	<b>340</b>	<b>27.7</b>	339	27.7
444.namd	431	18.6	431	18.6	<b>431</b>	<b>18.6</b>	420	19.1	<b>420</b>	<b>19.1</b>	420	19.1
447.dealII	265	43.2	267	42.9	<b>265</b>	<b>43.1</b>	<b>241</b>	<b>47.4</b>	241	47.5	241	47.4
450.soplex	<b>342</b>	<b>24.4</b>	343	24.3	341	24.5	317	26.3	<b>317</b>	<b>26.3</b>	317	26.3
453.povray	<b>224</b>	<b>23.7</b>	225	23.7	224	23.7	210	25.4	210	25.4	<b>210</b>	<b>25.4</b>
454.calculix	267	30.9	268	30.8	<b>268</b>	<b>30.8</b>	237	34.8	<b>237</b>	<b>34.8</b>	237	34.8
459.GemsFDTD	256	41.5	<b>256</b>	<b>41.5</b>	256	41.4	<b>218</b>	<b>48.6</b>	218	48.6	219	48.4
465.tonto	<b>440</b>	<b>22.4</b>	439	22.4	442	22.3	<b>370</b>	<b>26.6</b>	370	26.6	370	26.6
470.lbm	125	110	<b>125</b>	<b>110</b>	125	110	65.3	210	65.8	209	<b>65.3</b>	<b>210</b>
481.wrf	254	44.1	254	43.9	<b>254</b>	<b>44.0</b>	251	44.5	248	45.0	<b>249</b>	<b>44.9</b>
482.sphinx3	790	24.7	790	24.7	<b>790</b>	<b>24.7</b>	582	33.5	<b>582</b>	<b>33.5</b>	582	33.5

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  
Continued on next page



# SPEC CFP2006 Result

Copyright 2006-2014 Standard Performance Evaluation Corporation

**Tyan**

(Test Sponsor: Advanced Micro Devices)

Tyan YR190-B8228,  
AMD Opteron 4230 HE

**SPECfp2006 = 44.4**

**SPECfp\_base2006 = 38.9**

**CPU2006 license:** 49

**Test sponsor:** Advanced Micro Devices

**Tested by:** Advanced Micro Devices

**Test date:** Apr-2012

**Hardware Availability:** Jun-2012

**Software Availability:** Jul-2011

## Operating System Notes (Continued)

Set kernel/randomize\_va\_space=0 in /etc/sysctl.conf  
cpuspeed stop was used to set the CPU frequency to its maximum.

Set vm/nr\_hugepages=2000 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 = "2000"

LD\_LIBRARY\_PATH = "/root/work/cpu2006v1.2/amd1104-speed-libs-revA/32:/root/work/cpu2006v1.2/amd1104-speed-libs-revA/64"

O64\_OMP\_AFFINITY\_MAP = "0,1,2,3,4,5,6,7,8,9,10,11"

O64\_OMP\_SPIN\_COUNT = "800000"

O64\_OMP\_SPIN\_USER\_LOCK = "true"

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 6220 chips + 64GB Memory using RHEL 6.1

## 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

Continued on next page



# SPEC CFP2006 Result

Copyright 2006-2014 Standard Performance Evaluation Corporation

**Tyan**

(Test Sponsor: Advanced Micro Devices)

Tyan YR190-B8228,  
AMD Opteron 4230 HE

**SPECfp2006 = 44.4**

**SPECfp\_base2006 = 38.9**

**CPU2006 license:** 49

**Test sponsor:** Advanced Micro Devices

**Tested by:** Advanced Micro Devices

**Test date:** Apr-2012

**Hardware Availability:** Jun-2012

**Software Availability:** Jul-2011

## Base Portability Flags (Continued)

```

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

```

## Base Optimization Flags

C benchmarks:

```

-march=bdver1 -Ofast -HP:bdt=2m:heap=2m -apo -mso
-OPT:alias=restricted -OPT:malloc_alg=2 -LNO:parallel_overhead=10000

```

C++ benchmarks:

```

-march=bdver1 -Ofast -static -CG:load_exe=0 -CG:p2align=0
-INLINE:aggressive=on -HP:bdt=2m:heap=2m -D__OPEN64_FAST_SET

```

Fortran benchmarks:

```

-march=bdver1 -Ofast -LNO:blocking=off -LNO:fusion_peeling_limit=0
-LNO:parallel_overhead=10000 -OPT:rsqrt=2 -OPT:unroll_size=256
-HP:bdt=2m:heap=2m -apo

```

Benchmarks using both Fortran and C:

```

-march=bdver1 -Ofast -HP:bdt=2m:heap=2m -apo -mso
-OPT:alias=restricted -OPT:malloc_alg=2 -LNO:parallel_overhead=10000
-LNO:blocking=off -LNO:fusion_peeling_limit=0 -OPT:rsqrt=2
-OPT:unroll_size=256

```

## Peak Compiler Invocation

C benchmarks:

opencc

C++ benchmarks:

openCC

Fortran benchmarks:

openf95

Benchmarks using both Fortran and C:

opencc openf95



# SPEC CFP2006 Result

Copyright 2006-2014 Standard Performance Evaluation Corporation

**Tyan**

(Test Sponsor: Advanced Micro Devices)

Tyan YR190-B8228,  
AMD Opteron 4230 HE

**SPECfp2006 = 44.4**

**SPECfp\_base2006 = 38.9**

**CPU2006 license:** 49

**Test sponsor:** Advanced Micro Devices

**Tested by:** Advanced Micro Devices

**Test date:** Apr-2012

**Hardware Availability:** Jun-2012

**Software Availability:** Jul-2011

## 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
447.deallI: -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

```

## Peak Optimization Flags

C benchmarks:

```

433.milc: -march=bdver1 -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

470.lbm: -march=bdver1 -Ofast -mso -apo -CG:sse_cse_regs=0
-LNO:prefetch_ahead=4 -CG:locs_shallow_depth=1
-CG:cmp_peep=on -CG:compute_to=on -OPT:unroll_times_max=8
-OPT:unroll_size=256 -OPT:unroll_level=2 -OPT:keep_ext=on
-OPT:alias=restricted -m3dnow -IPA:inline=off

482.sphinx3: -march=bdver1 -fb_create fbdata(pass 1)
-fb_opt fbdata(pass 2) -Ofast -LNO:loop_model_simd=on
-LNO:simd_rm_unity_remainder=on -OPT:malloc_alg=2
-CG:cmp_peep=on -CG:local_sched_alg=2 -CG:use_incdec=off
-INLINE:aggressive=on -WOPT:sib=on -HP

```

C++ benchmarks:

```

444.namd: -march=bdver1 -fb_create fbdata(pass 1)
-fb_opt fbdata(pass 2) -Ofast -LNO:ignore_feedback=off
-CG:local_sched_alg=2 -CG:load_exe=0 -OPT:unroll_size=256
-fno-exceptions -HP:bdt=2m:heap=2m

447.deallI: -march=bdver1 -Ofast -LNO:simd=0 -D__OPEN64_FAST_SET
-static -INLINE:aggressive=on -OPT:alias=disjoint
-OPT:unroll_times_max=8 -OPT:unroll_size=256
-OPT:unroll_level=2 -HP:bdt=2m:heap=2m

```

Continued on next page



# SPEC CFP2006 Result

Copyright 2006-2014 Standard Performance Evaluation Corporation

**Tyan**

(Test Sponsor: Advanced Micro Devices)

Tyan YR190-B8228,  
AMD Opteron 4230 HE

**SPECfp2006 = 44.4**

**SPECfp\_base2006 = 38.9**

**CPU2006 license:** 49

**Test sponsor:** Advanced Micro Devices

**Tested by:** Advanced Micro Devices

**Test date:** Apr-2012

**Hardware Availability:** Jun-2012

**Software Availability:** Jul-2011

## Peak Optimization Flags (Continued)

450.soplex: -march=bdver1 -fb\_create fbdata(pass 1)  
-fb\_opt fbdata(pass 2) -O3 -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 -HP:bdt=2m:heap=2m -WOPT:sib=on

453.povray: -march=bdver1 -fb\_create fbdata(pass 1)  
-fb\_opt fbdata(pass 2) -Ofast -CG:pre\_local\_sched=off  
-INLINE:aggressive=on -HP:bdt=2m:heap=2m -OPT:transform=2  
-OPT:alias=disjoint -WOPT:aggcm=0

### Fortran benchmarks:

410.bwaves: -march=bdver1 -fb\_create fbdata(pass 1)  
-fb\_opt fbdata(pass 2) -Ofast -apo -OPT:Ofast  
-OPT:treeheight=on -LNO:blocking=off -LNO:prefetch=2  
-LNO:pf2=0 -LNO:prefetch\_ahead=3 -LNO:ignore\_feedback=off  
-LNO:fu=4 -LNO:loop\_model\_simd=on  
-LNO:simd\_rm\_unity\_remainder=on -WOPT:aggstr=0  
-HP:bdt=2m:heap=2m -CG:cmp\_peep=on -CG:p2align=0

416.gamess: -march=bdver1 -fb\_create fbdata(pass 1)  
-fb\_opt fbdata(pass 2) -O3 -LNO:fu=6 -LNO:blocking=0  
-LNO:simd=0 -OPT:Ofast -OPT:ro=3 -OPT:unroll\_size=256  
-OPT:unroll\_times\_max=2 -CG:local\_sched\_alg=1  
-HP:bdt=2m:heap=2m -WOPT:sib=on

434.zeusmp: -march=bdver1 -Ofast -apo -LNO:blocking=off  
-LNO:interchange=off -LNO:fusion\_peeling\_limit=0  
-OPT:treeheight=on -OPT:unroll\_size=256 -CG:cmp\_peep=on  
-CG:compute\_to=on -GRA:prioritize\_by\_density=on  
-HP:bdt=2m:heap=2m

437.leslie3d: -march=bdver1 -Ofast -LNO:prefetch=2 -LNO:blocking=off  
-CG:interior\_ptrs=on -OPT:unroll\_size=256  
-GRA:prioritize\_by\_density=on -HP:bdt=2m:heap=2m

459.GemsFDTD: -march=bdver1 -Ofast -OPT:unroll\_size=0 -LNO:fission=2  
-CG:load\_exe=0 -CG:local\_sched\_alg=2 -HP -apo

465.tonto: -march=bdver1 -Ofast -OPT:alias=no\_f90\_pointer\_alias  
-LNO:blocking=off -CG:load\_exe=1 -CG:local\_sched\_alg=1  
-IPA:plimit=525 -HP

### Benchmarks using both Fortran and C:

435.gromacs: -march=bdver1 -fb\_create fbdata(pass 1)  
-fb\_opt fbdata(pass 2) -Ofast -OPT:rsqrt=2  
-HP:bdt=2m:heap=2m

Continued on next page



# SPEC CFP2006 Result

Copyright 2006-2014 Standard Performance Evaluation Corporation

**Tyan**

(Test Sponsor: Advanced Micro Devices)

Tyan YR190-B8228,  
AMD Opteron 4230 HE

**SPECfp2006 = 44.4**

**SPECfp\_base2006 = 38.9**

**CPU2006 license:** 49

**Test sponsor:** Advanced Micro Devices

**Tested by:** Advanced Micro Devices

**Test date:** Apr-2012

**Hardware Availability:** Jun-2012

**Software Availability:** Jul-2011

## Peak Optimization Flags (Continued)

436.cactusADM: -march=bdver1 -fb\_create fbdata(pass 1)  
-fb\_opt fbdata(pass 2) -Ofast -LNO:blocking=off  
-LNO:prefetch=2 -HP:bdt=2m:heap=2m -CG:locs\_shallow\_depth=1  
-CG:load\_exe=0 -WOPT:sib=on -apo

454.calculix: -march=bdver1 -Ofast -OPT:unroll\_size=256  
-GRA:optimize\_boundary=on -HP:bdt=2m:heap=2m

481.wrf: -march=bdver1 -Ofast -OPT:unroll\_size=256 -LNO:blocking=off  
-LANG:copyinout=off -IPA:callee\_limit=5000  
-GRA:prioritize\_by\_density=on -CG:load\_exe=1 -HP  
-WOPT:sib=on -apo

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

<http://www.spec.org/cpu2006/flags/x86-open64-425-flags-speed-revA-I.html>

<http://www.spec.org/cpu2006/flags/amd-platform-speed-revA-I.html>

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

<http://www.spec.org/cpu2006/flags/x86-open64-425-flags-speed-revA-I.xml>

<http://www.spec.org/cpu2006/flags/amd-platform-speed-revA-I.xml>

SPEC and SPECfp are registered trademarks of the Standard Performance Evaluation Corporation. All other brand and product names appearing in this result are trademarks or registered trademarks of their respective holders.

For questions about this result, please contact the tester.  
For other inquiries, please contact [webmaster@spec.org](mailto:webmaster@spec.org).

Tested with SPEC CPU2006 v1.2.

Report generated on Thu Jul 24 04:32:23 2014 by SPEC CPU2006 PS/PDF formatter v6932.

Originally published on 6 June 2012.

Standard Performance Evaluation Corporation

[info@spec.org](mailto:info@spec.org)

<http://www.spec.org/>

Page 7