



SPEC[®] CFP2006 Result

Copyright 2006-2014 Standard Performance Evaluation Corporation

Tyan

(Test Sponsor: Advanced Micro Devices)

Tyan YR190-B8228,
AMD Opteron 4234

SPECfp[®]2006 = 44.6

SPECfp_base2006 = 39.3

CPU2006 license: 49

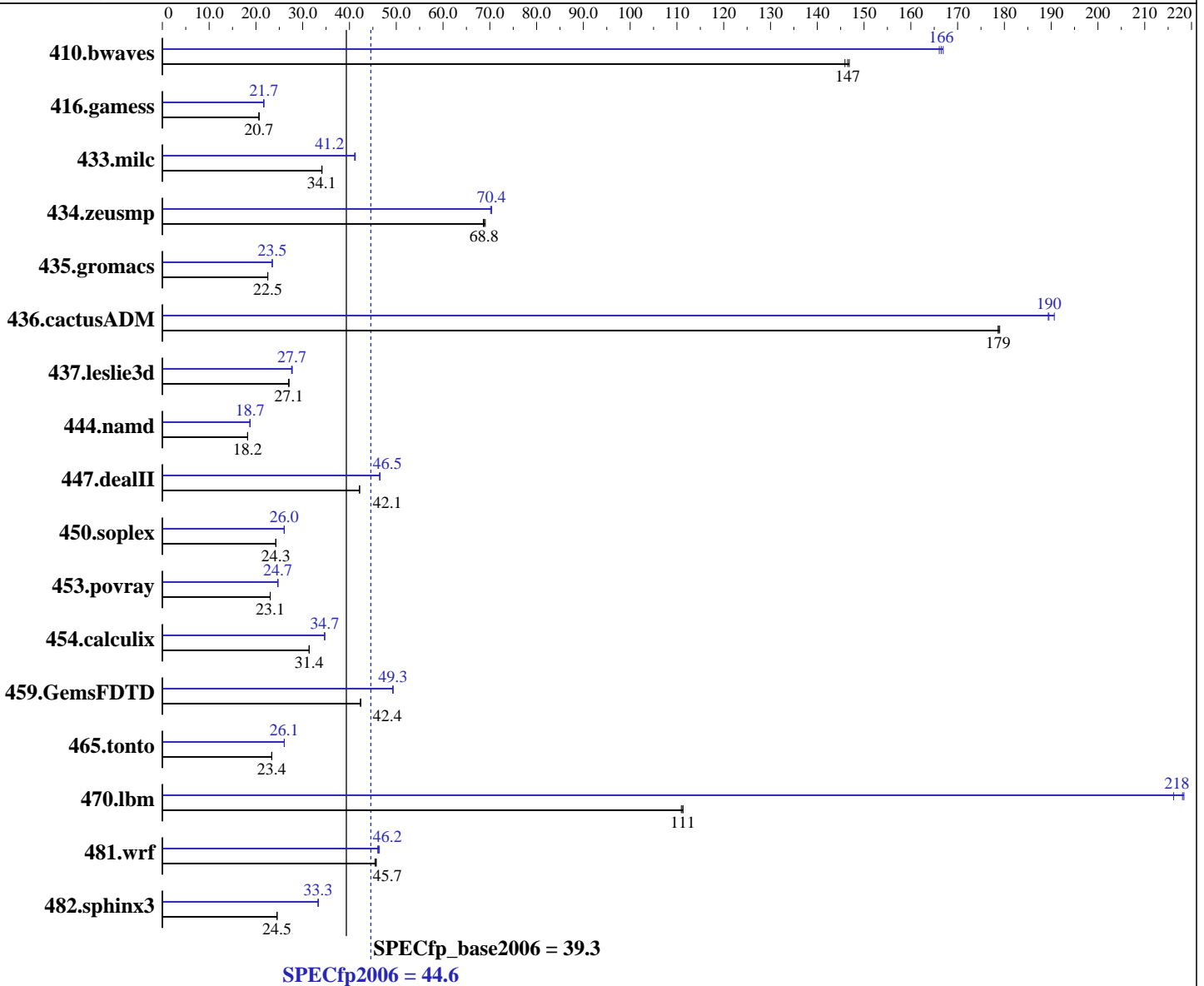
Test sponsor: Advanced Micro Devices

Tested by: Advanced Micro Devices

Test date: Jan-2012

Hardware Availability: Nov-2011

Software Availability: Jul-2011



Hardware

CPU Name: AMD Opteron 4234
 CPU Characteristics: AMD Turbo CORE technology up to 3.50 GHz
 CPU MHz: 3100
 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 4234

SPECfp2006 = 44.6

SPECfp_base2006 = 39.3

CPU2006 license: 49

Test sponsor: Advanced Micro Devices

Tested by: Advanced Micro Devices

Test date: Jan-2012

Hardware Availability: Nov-2011

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	92.6	147	93.1	146	<u>92.8</u>	<u>147</u>	81.8	166	<u>81.6</u>	<u>166</u>	81.4	167
416.gamess	948	20.7	<u>948</u>	<u>20.7</u>	948	20.7	903	21.7	903	21.7	<u>903</u>	<u>21.7</u>
433.milc	269	34.1	<u>269</u>	<u>34.1</u>	269	34.1	223	41.1	223	41.2	<u>223</u>	<u>41.2</u>
434.zeusmp	133	68.6	132	69.0	<u>132</u>	<u>68.8</u>	130	70.2	<u>129</u>	<u>70.4</u>	129	70.4
435.gromacs	317	22.5	<u>317</u>	<u>22.5</u>	317	22.5	304	23.5	304	23.5	<u>304</u>	<u>23.5</u>
436.cactusADM	66.8	179	66.9	179	<u>66.9</u>	<u>179</u>	63.1	189	62.7	191	<u>63.1</u>	<u>190</u>
437.leslie3d	<u>347</u>	<u>27.1</u>	349	27.0	347	27.1	<u>339</u>	<u>27.7</u>	339	27.8	340	27.6
444.namd	<u>440</u>	<u>18.2</u>	440	18.2	440	18.2	428	18.7	428	18.7	<u>428</u>	<u>18.7</u>
447.dealII	271	42.2	<u>271</u>	<u>42.1</u>	272	42.1	246	46.5	246	46.5	<u>246</u>	<u>46.5</u>
450.soplex	344	24.2	343	24.3	<u>344</u>	<u>24.3</u>	<u>320</u>	<u>26.0</u>	320	26.0	320	26.1
453.povray	<u>231</u>	<u>23.1</u>	231	23.1	231	23.0	215	24.7	215	24.7	<u>215</u>	<u>24.7</u>
454.calculix	263	31.4	263	31.4	<u>263</u>	<u>31.4</u>	238	34.7	<u>238</u>	<u>34.7</u>	238	34.7
459.GemsFDTD	<u>250</u>	<u>42.4</u>	250	42.4	251	42.4	215	49.3	215	49.3	<u>215</u>	<u>49.3</u>
465.tonto	420	23.4	421	23.4	<u>421</u>	<u>23.4</u>	378	26.1	378	26.1	<u>378</u>	<u>26.1</u>
470.lbm	123	111	<u>123</u>	<u>111</u>	124	111	<u>63.0</u>	<u>218</u>	63.6	216	62.9	218
481.wrf	<u>244</u>	<u>45.7</u>	246	45.4	244	45.7	243	46.0	241	46.4	<u>242</u>	<u>46.2</u>
482.sphinx3	795	24.5	<u>795</u>	<u>24.5</u>	795	24.5	585	33.3	<u>585</u>	<u>33.3</u>	585	33.3

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 4234

SPECfp2006 = 44.6

SPECfp_base2006 = 39.3

CPU2006 license: 49

Test sponsor: Advanced Micro Devices

Tested by: Advanced Micro Devices

Test date: Jan-2012

Hardware Availability: Nov-2011

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:

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
453.povray: -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 4234

SPECfp2006 = 44.6

SPECfp_base2006 = 39.3

CPU2006 license: 49

Test sponsor: Advanced Micro Devices

Tested by: Advanced Micro Devices

Test date: Jan-2012

Hardware Availability: Nov-2011

Software Availability: Jul-2011

Base Portability Flags (Continued)

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 4234

SPECfp2006 = 44.6

SPECfp_base2006 = 39.3

CPU2006 license: 49

Test sponsor: Advanced Micro Devices

Tested by: Advanced Micro Devices

Test date: Jan-2012

Hardware Availability: Nov-2011

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.dealII: -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.dealII: -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 4234

SPECfp2006 = 44.6

SPECfp_base2006 = 39.3

CPU2006 license: 49

Test sponsor: Advanced Micro Devices

Tested by: Advanced Micro Devices

Test date: Jan-2012

Hardware Availability: Nov-2011

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 4234

SPECfp2006 = 44.6

SPECfp_base2006 = 39.3

CPU2006 license: 49

Test sponsor: Advanced Micro Devices

Tested by: Advanced Micro Devices

Test date: Jan-2012

Hardware Availability: Nov-2011

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 file that was used to format this result can be browsed at

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

You can also download the XML flags source by saving the following link:

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

Tested with SPEC CPU2006 v1.2.
Report generated on Thu Jul 24 02:04:37 2014 by SPEC CPU2006 PS/PDF formatter v6932.
Originally published on 24 February 2012.