



SPEC® CFP2006 Result

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Tyan

(Test Sponsor: Advanced Micro Devices)

Tyan YR190B8228,
AMD Opteron 4174 HE

SPECfp®2006 =

29.7

SPECfp_base2006 =

24.7

CPU2006 license: 49

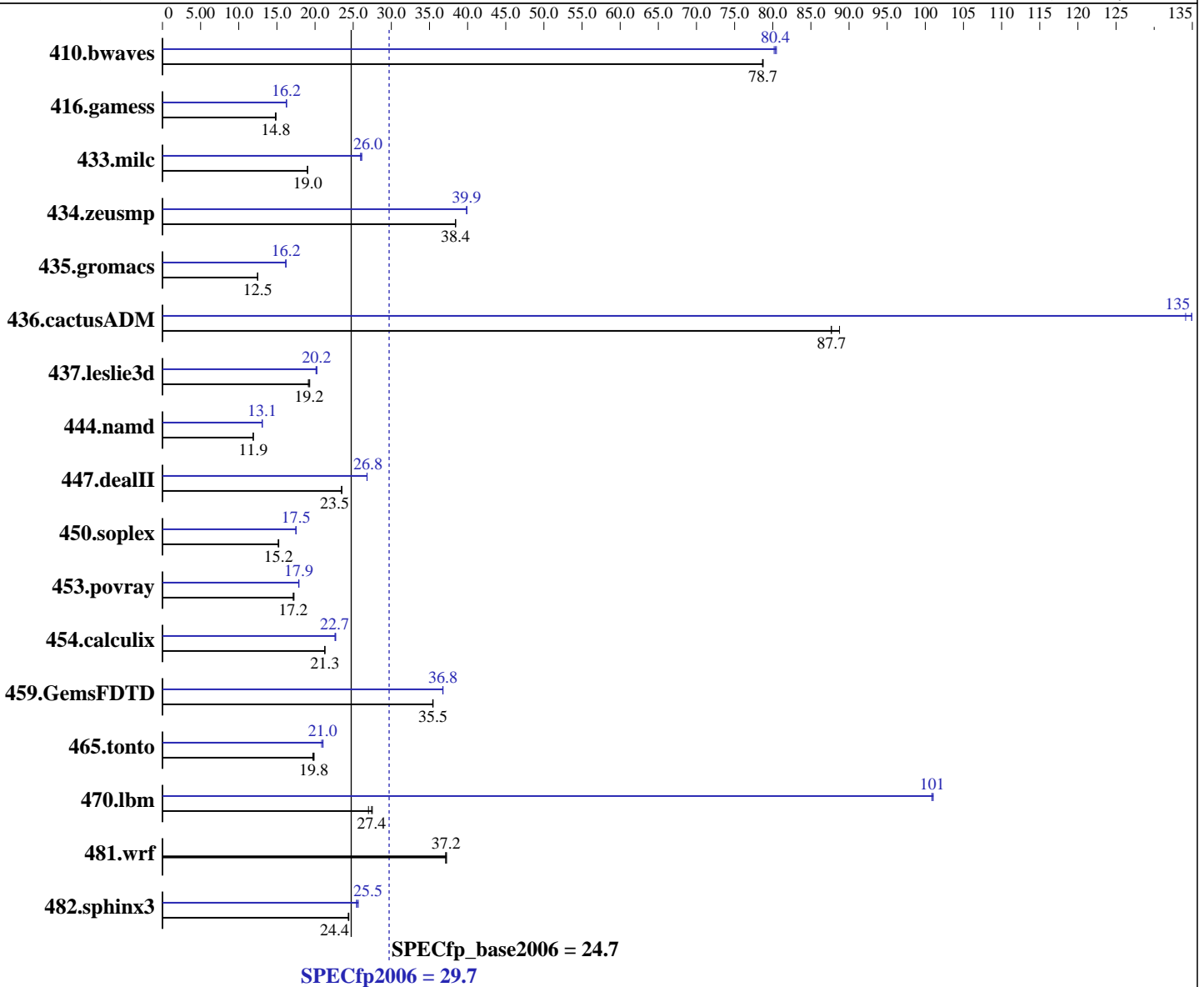
Test sponsor: Advanced Micro Devices

Tested by: Advanced Micro Devices

Test date: Nov-2010

Hardware Availability: Aug-2010

Software Availability: May-2010



Hardware

CPU Name: AMD Opteron 4174 HE
 CPU Characteristics:
 CPU MHz: 2300
 FPU: Integrated
 CPU(s) enabled: 6 cores, 1 chip, 6 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 11 (x86_64),
Kernel 2.6.27.19-5-default
 Compiler: x86 Open64 4.2.3.2 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
 Other Software: None



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L3 Cache: 6 MB I+D on chip per chip
Other Cache: None
Memory: 16 GB (2 x 8 GB 2Rx4 PC3-10600R-9, ECC)
Disk Subsystem: 1 x 128 GB SATA SSD
Crucial RealSSD C300 CTFDDAC128MAG-1G1
Other Hardware: None

Results Table

Benchmark	Base						Peak					
	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
410.bwaves	173	78.7	173	78.7	173	78.7	169	80.2	169	80.5	169	80.4
416.gamess	1315	14.9	1320	14.8	1323	14.8	1205	16.2	1205	16.2	1204	16.3
433.milc	483	19.0	482	19.0	483	19.0	353	26.0	351	26.1	353	26.0
434.zeusmp	237	38.4	237	38.4	237	38.4	228	39.9	228	39.9	228	39.9
435.gromacs	572	12.5	572	12.5	573	12.5	442	16.2	441	16.2	441	16.2
436.cactusADM	136	87.7	136	87.7	135	88.7	88.6	135	88.6	135	89.1	134
437.leslie3d	487	19.3	492	19.1	489	19.2	465	20.2	467	20.1	464	20.2
444.namd	675	11.9	674	11.9	674	11.9	614	13.1	613	13.1	614	13.1
447.dealII	487	23.5	487	23.5	487	23.5	427	26.8	426	26.8	427	26.8
450.soplex	550	15.2	547	15.3	548	15.2	476	17.5	477	17.5	477	17.5
453.povray	310	17.2	308	17.2	310	17.2	297	17.9	298	17.8	298	17.9
454.calculix	388	21.3	388	21.3	387	21.3	363	22.7	365	22.6	364	22.7
459.GemsFDTD	299	35.5	299	35.5	300	35.4	289	36.8	289	36.8	289	36.7
465.tonto	495	19.9	496	19.8	499	19.7	468	21.0	472	20.9	467	21.0
470.lbm	499	27.5	501	27.4	509	27.0	136	101	136	101	136	101
481.wrf	301	37.1	300	37.2	301	37.2	301	37.1	300	37.2	301	37.2
482.sphinx3	798	24.4	798	24.4	800	24.3	759	25.7	764	25.5	766	25.4

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=1000 in /etc/sysctl.conf
mount -t hugetlbfs nodev /mnt/hugepages

powersave -f was used to set the CPU frequency to its maximum.

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Operating System Notes (Continued)

Binaries were compiled on SLES10 SP2 with binutils 2.18

General Notes

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

LD_LIBRARY_PATH = "/root/work/cpu2006/amd1002-speed-libs-revA/64:/root/work/cpu2006/amd1002-speed-libs-revA/32"

O64_OMP_AFFINITY_MAP = "0,1,2,3,4,5"

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>

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

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Base Portability Flags (Continued)

482.sphinx3: -DSPEC_CPU_LP64

Base Optimization Flags

C benchmarks:

-march=barcelona -Ofast -HP:bdt=2m:heap=2m

C++ benchmarks:

-march=barcelona -Ofast -static -INLINE:aggressive=on
-HP:bdt=2m:heap=2m

Fortran benchmarks:

-march=barcelona -Ofast -apo -LNO:parallel_overhead=10000
-LNO:fusion_peeling_limit=0 -HP:bdt=2m:heap=2m

Benchmarks using both Fortran and C:

-march=barcelona -Ofast -HP:bdt=2m:heap=2m -apo
-LNO:parallel_overhead=10000 -LNO:fusion_peeling_limit=0

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
435.gromacs: -DSPEC_CPU_LP64
436.cactusADM: -DSPEC_CPU_LP64 -fno-second-underscore
437.leslie3d: -DSPEC_CPU_LP64
444.namd: -DSPEC_CPU_LP64

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Peak 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

Peak Optimization Flags

C benchmarks:

433.milc: -march=barcelona -Ofast -apo -CG:movnti=1
 -CG:local_sched_alg=1 -CG:locs_shallow_depth=1
 -CG:compute_to=on -HP:bdt=2m:heap=2m -LNO:prefetch=3

470.lbm: -march=barcelona -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=barcelona -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 -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.deaIII: -march=barcelona -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 -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 -CG:load_exe=0 -fno-exceptions
 -m32 -HP:bdt=2m:heap=2m

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Peak Optimization Flags (Continued)

453.povray: -march=barcelona -fb_create fbdata(pass 1)
-fb_opt fbdata(pass 2) -Ofast -INLINE:aggressive=on
-HP:bdt=2m:heap=2m

Fortran benchmarks:

410.bwaves: -march=barcelona -Ofast -apo -OPT:malloc_alg=2
-CG:use_prefetchnta=on -CG:cmp_peep=on -LNO:blocking=off
-LNO:prefetch=3 -LNO:prefetch_ahead=5
-LNO:ignore_feedback=off -LNO:apo_use_feedback=on
-WOPT:aggstr=0

416.gamess: -march=barcelona -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 -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=barcelona -Ofast -apo -OPT:unroll_size=256
-LNO:prefetch_ahead=4 -LNO:parallel_overhead=32768
-GRA:prioritize_by_density=on -m3dnow -HP:bdt=2m:heap=2m

459.GemsFDTD: -march=barcelona -Ofast -apo -LNO:fission=2
-LNO:prefetch_ahead=1 -CG:load_exe=0 -CG:local_sched_alg=1
-HP

465.tonto: -march=barcelona -Ofast -apo
-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 -Ofast -apo -OPT:rsqrt=2
-HP:bdt=2m:heap=2m

436.cactusADM: -march=barcelona -fb_create fbdata(pass 1)
-fb_opt fbdata(pass 2) -Ofast -apo
-LANG:heap_allocation_threshold=1000 -LNO:prefetch_ahead=1
-HP:bdt=2m:heap=2m

454.calculix: -march=barcelona -Ofast -LNO:prefetch_ahead=30
-CG:load_exe=0 -CG:ptr_load_use=0 -CG:local_sched_alg=2
-CG:compute_to=on -WOPT:unroll=2 -GRA:optimize_boundary=on
-HP:bdt=2m:heap=2m -apo

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Peak Optimization Flags (Continued)

481.wrf: basepeak = yes

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

<http://www.spec.org/cpu2006/flags/x86-open64-423-flags-speed-revA.20101207.html>

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

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

<http://www.spec.org/cpu2006/flags/x86-open64-423-flags-speed-revA.20101207.xml>

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

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For questions about this result, please contact the tester.
For other inquiries, please contact webmaster@spec.org.

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