



SPEC[®] CFP2006 Result

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Supermicro

(Test Sponsor: Advanced Micro Devices)

Supermicro A+ Server 2042G-6RF,
AMD Opteron 6282 SE

SPECfp[®]_rate2006 = 752

SPECfp_rate_base2006 = 701

CPU2006 license: 49

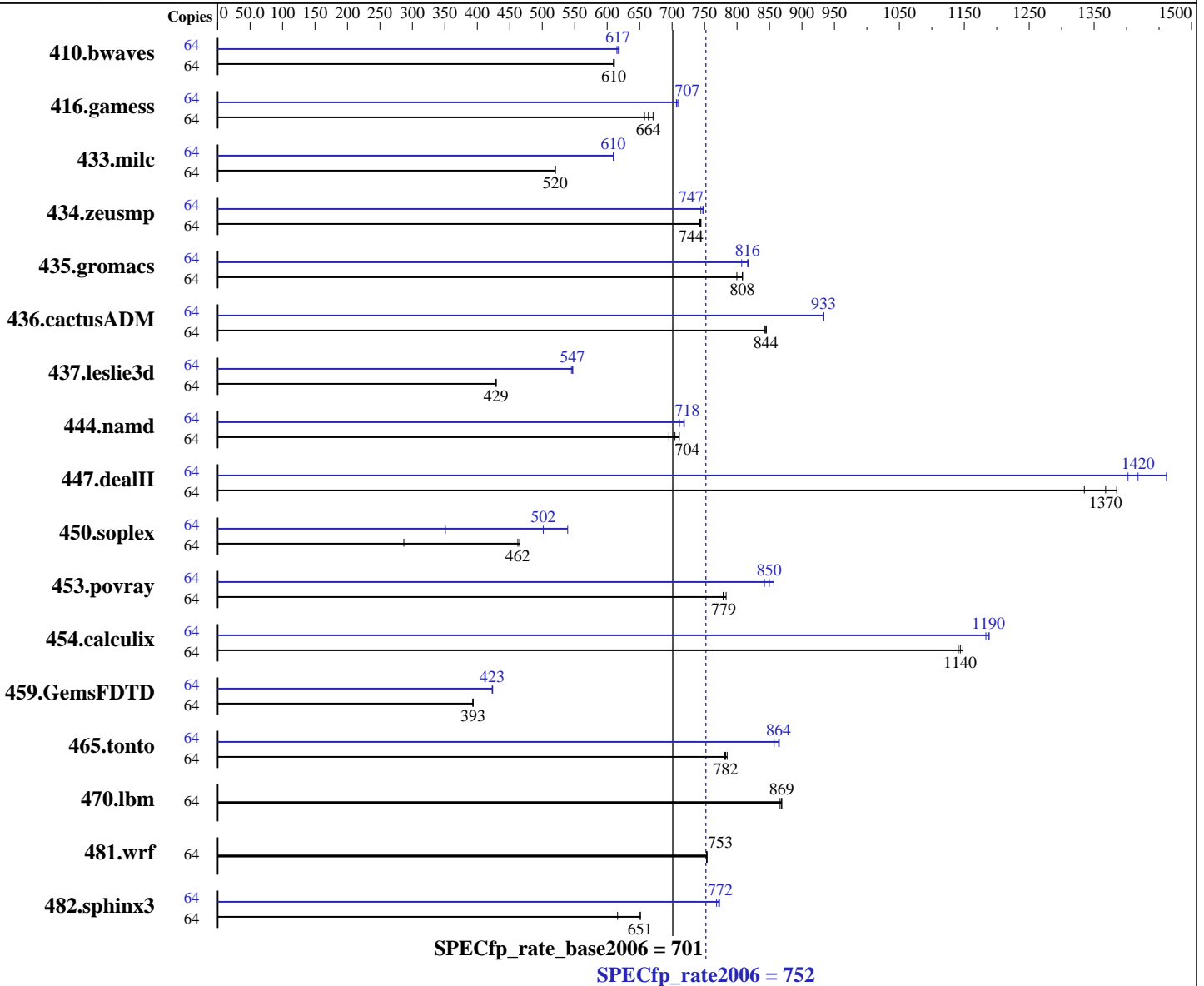
Test sponsor: Advanced Micro Devices

Tested by: Advanced Micro Devices

Test date: Oct-2011

Hardware Availability: Nov-2011

Software Availability: Jul-2011



Hardware

CPU Name: AMD Opteron 6282 SE
 CPU Characteristics: AMD Turbo CORE technology up to 3.30 GHz
 CPU MHz: 2600
 FPU: Integrated
 CPU(s) enabled: 64 cores, 4 chips, 16 cores/chip
 CPU(s) orderable: 2,4 chips

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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: No
 File System: ext3
 System State: Run level 3 (Full multiuser with network)
 Base Pointers: 64-bit
 Peak Pointers: 32/64-bit

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Primary Cache: 512 KB I on chip per chip,
64 KB I shared / 2 cores;
16 KB D on chip per core

Secondary Cache: 16 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 / 8 cores

Other Cache: None

Memory: 128 GB (16 x 8 GB 2Rx4 PC3-12800R-11, ECC)

Disk Subsystem: 1 x 1000 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	64	1425	610	1423	611	1426	610	64	1414	615	1406	618	1410	617		
416.gamess	64	1868	671	1889	664	1906	657	64	1772	707	1773	707	1768	709		
433.milc	64	1130	520	1130	520	1130	520	64	963	610	964	610	964	609		
434.zeusmp	64	782	744	783	744	784	743	64	779	747	779	748	783	744		
435.gromacs	64	571	800	565	809	565	808	64	566	807	559	817	560	816		
436.cactusADM	64	907	843	905	845	906	844	64	819	933	819	933	819	934		
437.leslie3d	64	1402	429	1403	429	1407	427	64	1100	547	1100	547	1104	545		
444.namd	64	738	695	722	711	729	704	64	722	711	715	718	714	719		
447.dealII	64	529	1380	535	1370	548	1330	64	522	1400	516	1420	501	1460		
450.soplex	64	1861	287	1154	462	1147	465	64	1521	351	1064	502	990	539		
453.povray	64	437	779	437	779	435	783	64	404	842	397	857	401	850		
454.calculix	64	460	1150	462	1140	463	1140	64	445	1190	444	1190	446	1180		
459.GemsFDTD	64	1727	393	1726	393	1726	393	64	1605	423	1605	423	1603	424		
465.tonto	64	805	782	802	785	806	781	64	729	864	735	857	728	865		
470.lbm	64	1012	869	1012	869	1015	866	64	1012	869	1012	869	1015	866		
481.wrf	64	949	753	949	753	948	754	64	949	753	949	753	948	754		
482.sphinx3	64	2025	616	1917	651	1915	651	64	1623	768	1616	772	1614	773		

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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Operating System Notes (Continued)

Set kernel/randomize_va_space=0 in /etc/sysctl.conf

Huge pages were not configured for this run.

General Notes

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

LD_LIBRARY_PATH = "/root/work/cpu2006v1.1/amd1104-rate-libs-revA/32:/root/work/cpu2006v1.1/amd1104-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 6276 chips + 128GB Memory using RHEL 6.1

Base Compiler Invocation

C benchmarks:
openc

C++ benchmarks:
openCC

Fortran benchmarks:
openf95

Benchmarks using both Fortran and C:
openc 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_LINUX -DSPEC_CPU_CASE_FLAG -DSPEC_CPU_LP64
-fno-second-underscore

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Base Portability Flags (Continued)

482.sphinx3: -DSPEC_CPU_LP64

Base Optimization Flags

C benchmarks:

-march=bdver1 -Ofast -OPT:malloc_alg=1 -HP:bd=2m:heap=2m
-IPA:plimit=8000 -IPA:small_pu=100 -mso

C++ benchmarks:

-march=bdver1 -Ofast -static -CG:load_exe=0 -OPT:malloc_alg=1
-INLINE:aggressive=on -HP:bd=2m:heap=2m -D__OPEN64_FAST_SET

Fortran benchmarks:

-march=bdver1 -Ofast -LNO:blocking=off -OPT:rsqrt=2
-OPT:unroll_size=256 -HP:bd=2m:heap=2m -mso

Benchmarks using both Fortran and C:

-march=bdver1 -Ofast -OPT:malloc_alg=1 -HP:bd=2m:heap=2m
-IPA:plimit=8000 -IPA:small_pu=100 -mso -LNO:blocking=off
-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

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

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Peak Portability Flags (Continued)

```

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
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 -mso

```

```

470.lbm: basepeak = yes

```

```

482.sphinx3: -march=bdver1 -fb_create fbdata(pass 1)
        -fb_opt fbdata(pass 2) -Ofast -OPT:malloc_alg=2
        -CG:cmp_peep=on -CG:local_sched_alg=2 -INLINE:aggressive=on
        -LNO:prefetch=2 -LNO:prefetch_ahead=4 -mso

```

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 -D__OPEN64_FAST_SET -static
        -INLINE:aggressive=on -LNO:opt=0 -LNO:simd=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 -CG:movext_icmp=off
        -TENV:frame_pointer=off

```

```

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 -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:bd=2m:heap=2m -OPT:transform=2

```

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Peak Optimization Flags (Continued)

453.povray (continued):

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

Fortran benchmarks:

410.bwaves: -march=bdver1 -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

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:bd=2m:heap=2m -WOPT:sib=on

434.zeusmp: -march=bdver1 -Ofast -LNO:blocking=off -LNO:interchange=off
-HP:bd=2m:heap=2m

437.leslie3d: -march=bdver1 -Ofast -CG:pre_minreg_level=2 -LNO:simd=0
-LNO:fusion=2 -HP:bd=2m:heap=2m -mso

459.GemsFDTD: -march=bdver1 -Ofast -OPT:unroll_size=0 -LNO:fission=2
-CG:load_exe=0 -CG:local_sched_alg=2 -HP

465.tonto: -march=bdver1 -Ofast -OPT:alias=no_f90_pointer_alias
-LNO:blocking=off -CG:load_exe=1 -IPA:plimit=525
-HP:bd=2m:heap=2m

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:bd=2m:heap=2m

436.cactusADM: -march=bdver1 -fb_create fbdata(pass 1)
-fb_opt fbdata(pass 2) -Ofast -LNO:blocking=off
-LNO:prefetch=2 -HP -CG:locs_shallow_depth=1 -CG:load_exe=0
-WOPT:sib=on

454.calculix: -march=bdver1 -Ofast -OPT:unroll_size=256
-GRA:optimize_boundary=on -HP:bd=2m:heap=2m

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-open64-425-flags-rate-revA.html>

<http://www.spec.org/cpu2006/flags/amd1104-platform-rate-revA.html>



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

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

<http://www.spec.org/cpu2006/flags/amd1104-platform-rate-revA.xml>

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