



SPEC® CFP2006 Result

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Supermicro

Supermicro A+ Server AS-1012G-MTF,
AMD Opteron 6164 HE

SPECfp®_rate2006 = 134

SPECfp_rate_base2006 = 124

CPU2006 license: 001176

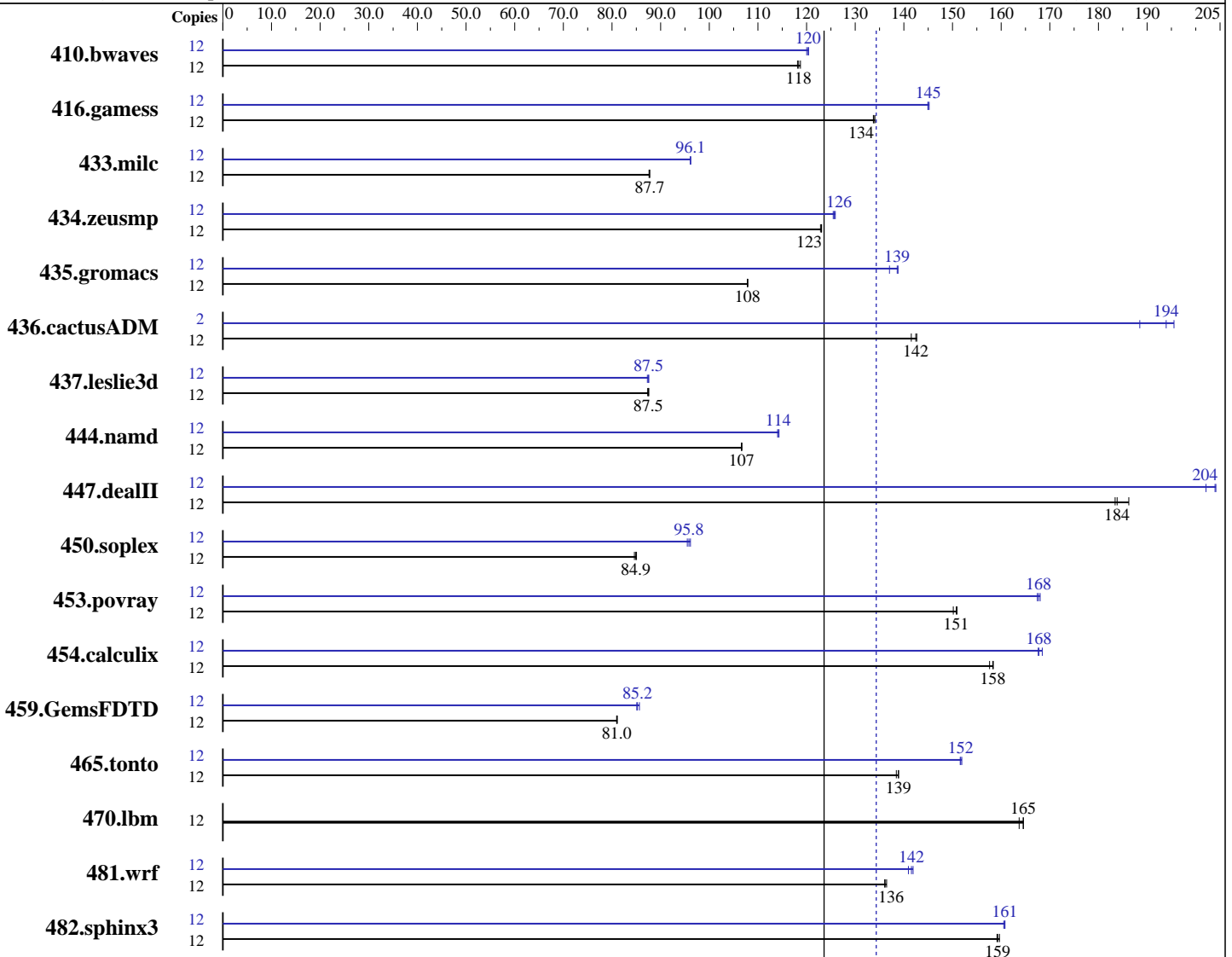
Test sponsor: Supermicro

Tested by: Supermicro

Test date: Dec-2010

Hardware Availability: Mar-2010

Software Availability: Jul-2010



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Hardware

CPU Name: AMD Opteron 6164 HE
 CPU Characteristics:
 CPU MHz: 1700
 FPU: Integrated
 CPU(s) enabled: 12 cores, 1 chip, 12 cores/chip
 CPU(s) orderable: 1 chip
 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: Red Hat Enterprise Linux Server release 5.5,
Kernel 2.6.18-194.el5
 Compiler: x86 Open64 4.2.4 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: binutils 2.18



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L3 Cache: 12 MB I+D on chip per chip, 6 MB shared / 6 cores
Other Cache: None
Memory: 32 GB (8 x 4 GB 2Rx8 PC3-10600R-9, ECC)
Disk Subsystem: 1 x 500 GB SATA, 7200 RPM
Other Hardware: None

Results Table

Benchmark	Base							Peak						
	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
410.bwaves	12	1380	118	1373	119	1378	118	12	1359	120	1354	120	1356	120
416.gamess	12	1756	134	1757	134	1753	134	12	1620	145	1618	145	1621	145
433.milc	12	1255	87.8	1256	87.7	1257	87.6	12	1145	96.2	1146	96.1	1146	96.1
434.zeusmp	12	887	123	887	123	889	123	12	867	126	869	126	870	125
435.gromacs	12	795	108	794	108	794	108	12	625	137	618	139	617	139
436.cactusADM	12	1013	142	1007	142	1005	143	2	123	194	127	188	122	196
437.leslie3d	12	1288	87.6	1292	87.3	1289	87.5	12	1289	87.5	1289	87.5	1293	87.3
444.namd	12	903	107	902	107	902	107	12	842	114	844	114	843	114
447.dealII	12	747	184	748	183	737	186	12	679	202	672	204	673	204
450.soplex	12	1183	84.6	1179	84.9	1177	85.0	12	1044	95.8	1048	95.5	1041	96.1
453.povray	12	423	151	423	151	425	150	12	381	167	381	168	380	168
454.calculix	12	625	158	625	158	628	158	12	591	168	590	168	588	168
459.GemsFDTD	12	1572	81.0	1570	81.1	1573	81.0	12	1496	85.1	1487	85.6	1494	85.2
465.tonto	12	850	139	853	138	850	139	12	777	152	779	152	778	152
470.lbm	12	1007	164	1002	165	1002	165	12	1007	164	1002	165	1002	165
481.wrf	12	985	136	985	136	982	136	12	951	141	947	142	945	142
482.sphinx3	12	1465	160	1468	159	1470	159	12	1455	161	1455	161	1457	161

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=5400 in /etc/sysctl.conf
mount -t hugetlbfs nodev /mnt/hugepages



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Platform Notes

Fan speed set to Full Speed in BIOS Setup.
The system uses a Supermicro H8SGL-F motherboard.

General Notes

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

HUGETLB_LIMIT = "450"

LD_LIBRARY_PATH = "/usr/cpu2006/amd1002-rate-libs-revC/64:/usr/cpu2006/amd1002-rate-libs-revC/32"

OMP_NUM_THREADS = "6"

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 -mso -Ofast -OPT:malloc_alg=1 -HP:bdt=2m

C++ benchmarks:

-march=barcelona -mso -Ofast -static -INLINE:aggressive=on
-OPT:malloc_alg=1 -HP:bdt=2m

Fortran benchmarks:

-march=barcelona -mso -Ofast -HP

Benchmarks using both Fortran and C:

-march=barcelona -mso -Ofast -OPT:malloc_alg=1 -HP:bdt=2m -HP

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
453.povray: -DSPEC_CPU_LP64
454.calculix: -DSPEC_CPU_LP64

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Peak Portability Flags (Continued)

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 -mso -Ofast -CG:movnti=1
-CG:local_sched_alg=1 -CG:locs_shallow_depth=1
-HP:bdt=2m:heap=2m -LNO:prefetch=3

470.lbm: basepeak = yes

482.sphinx3: -march=barcelona -mso -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 -mso -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.dealII: -march=barcelona -mso -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 -mso -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 -OPT:malloc_alg=1
-CG:load_exe=0 -fno-exceptions -m32 -HP:bdt=2m

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

Fortran benchmarks:

410.bwaves: -march=barcelona -mso -O3 -OPT:Ofast -OPT:treeheight=on
-LNO:blocking=off -LNO:prefetch_ahead=5
-LNO:ignore_feedback=off -WOPT:aggstr=0 -HP:bdt=2m:heap=2m

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Peak Optimization Flags (Continued)

410.bwaves (continued):

-CG:cmp_peep=on

416.gamess: -march=barcelona -mso -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 -mso -Ofast -LNO:blocking=off

-LNO:interchange=off -OPT:treeheight=on -OPT:unroll_size=256

-CG:cmp_peep=on -GRA:prioritize_by_density=on -HP

437.leslie3d: -march=barcelona -mso -Ofast -HP:bdt=2m:heap=2m

459.GemsFDTD: -march=barcelona -mso -Ofast -LNO:fission=2

-LNO:prefetch_ahead=1 -CG:load_exe=0 -CG:local_sched_alg=1

-HP

465.tonto: -march=barcelona -mso -Ofast

-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 -mso -Ofast -OPT:rsqrt=2

-HP:bdt=2m:heap=2m

436.cactusADM: -march=barcelona -mso -fb_create fbdata(pass 1)

-fb_opt fbdata(pass 2) -Ofast -apo -LNO:prefetch_ahead=1

-HP:bdt=2m:heap=2m -LANG:heap_allocation_threshold=100

454.calculix: -march=barcelona -mso -Ofast -CG:load_exe=0

-CG:ptr_load_use=0 -CG:local_sched_alg=2 -CG:compute_to=on

-LNO:prefetch_ahead=30 -WOPT:unroll=2

-GRA:optimize_boundary=on -HP:bdt=2m:heap=2m

481.wrf: -march=barcelona -mso -Ofast -LNO:blocking=off

-LNO:prefetch_ahead=10 -LANG:copyinout=off

-IPA:callee_limit=5000 -GRA:prioritize_by_density=on -m3dnow

-HP

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

<http://www.spec.org/cpu2006/flags/x86-open64-424-flags-rate-revC.20100901.html>

<http://www.spec.org/cpu2006/flags/amd-platform-rate-revC.20110119.html>

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

<http://www.spec.org/cpu2006/flags/x86-open64-424-flags-rate-revC.20100901.xml>

<http://www.spec.org/cpu2006/flags/amd-platform-rate-revC.20110119.xml>



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For other inquiries, please contact webmaster@spec.org.

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