



SPEC® CFP2006 Result

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Supermicro

SPECfp®_rate2006 = 148

H8DA3-2, AMD Opteron 2439 SE

SPECfp_rate_base2006 = 133

CPU2006 license: 001176

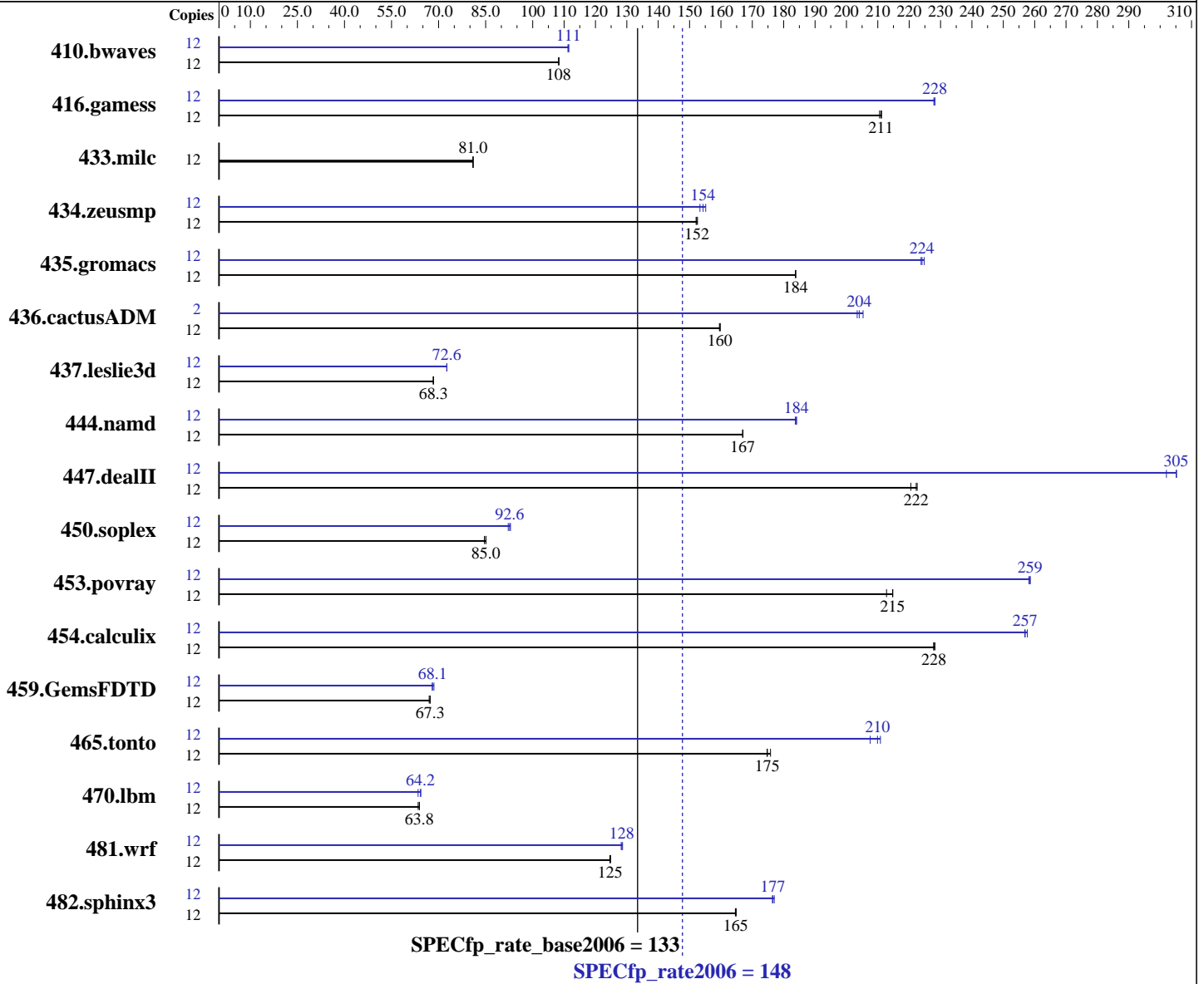
Test date: Jul-2009

Test sponsor: Supermicro

Hardware Availability: Jun-2009

Tested by: Supermicro

Software Availability: Apr-2009



Hardware

CPU Name: AMD Opteron 2439 SE
 CPU Characteristics:
 CPU MHz: 2800
 FPU: Integrated
 CPU(s) enabled: 12 cores, 2 chips, 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: Red Hat Enterprise Linux Server release 5.3, Advanced Platform, Kernel 2.6.18-128.el5
 Compiler: PGI Server Complete Version 8.0 x86 Open64 4.2.2 Compiler Suite (from AMD)
 Auto Parallel: Yes
 File System: ext3
 System State: Run level 2 (Local multiuser without remote network)
 Base Pointers: 64-bit

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L3 Cache: 6 MB I+D on chip per chip
Other Cache: None
Memory: 32 GB (8x4 GB, DDR2-800, CL5, Reg, Dual Rank)
Disk Subsystem: 1 x 500 GB SATA, 7200 RPM
Other Hardware: None

Peak Pointers: 32/64-bit
Other Software: binutils 2.18

Results Table

Benchmark	Base							Peak						
	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
410.bwaves	12	<u>1506</u>	<u>108</u>	1506	108	1505	108	12	<u>1463</u>	<u>111</u>	1463	111	1466	111
416.gamess	12	1112	211	1116	211	<u>1114</u>	<u>211</u>	12	1030	228	<u>1030</u>	<u>228</u>	1031	228
433.milc	12	1360	81.0	<u>1360</u>	<u>81.0</u>	1360	81.0	12	1360	81.0	<u>1360</u>	<u>81.0</u>	1360	81.0
434.zeusmp	12	718	152	716	153	<u>717</u>	<u>152</u>	12	704	155	712	153	<u>708</u>	<u>154</u>
435.gromacs	12	466	184	466	184	<u>466</u>	<u>184</u>	12	381	225	383	224	<u>382</u>	<u>224</u>
436.cactusADM	12	899	160	<u>898</u>	<u>160</u>	898	160	2	116	205	117	203	<u>117</u>	<u>204</u>
437.leslie3d	12	1651	68.3	1650	68.3	<u>1651</u>	<u>68.3</u>	12	1553	72.7	<u>1553</u>	<u>72.6</u>	1554	72.6
444.namd	12	576	167	<u>576</u>	<u>167</u>	577	167	12	524	184	523	184	<u>523</u>	<u>184</u>
447.dealII	12	617	223	623	221	<u>618</u>	<u>222</u>	12	450	305	<u>450</u>	<u>305</u>	455	302
450.soplex	12	<u>1177</u>	<u>85.0</u>	1176	85.1	1183	84.6	12	<u>1080</u>	<u>92.6</u>	1086	92.2	1077	92.9
453.povray	12	297	215	<u>297</u>	<u>215</u>	300	213	12	247	259	247	258	<u>247</u>	<u>259</u>
454.calculix	12	<u>434</u>	<u>228</u>	435	228	434	228	12	<u>385</u>	<u>257</u>	385	257	384	258
459.GemsFDTD	12	<u>1892</u>	<u>67.3</u>	1891	67.3	1901	67.0	12	1873	68.0	<u>1871</u>	<u>68.1</u>	1858	68.5
465.tonto	12	<u>676</u>	<u>175</u>	676	175	672	176	12	<u>563</u>	<u>210</u>	560	211	569	208
470.lbm	12	2581	63.9	<u>2582</u>	<u>63.8</u>	2597	63.5	12	2598	63.5	2563	64.3	<u>2567</u>	<u>64.2</u>
481.wrf	12	1076	125	1074	125	<u>1075</u>	<u>125</u>	12	1042	129	1046	128	<u>1044</u>	<u>128</u>
482.sphinx3	12	1419	165	1421	165	<u>1420</u>	<u>165</u>	12	1321	177	1326	176	<u>1324</u>	<u>177</u>

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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General Notes

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

HUGETLB_LIMIT = "450"

LD_LIBRARY_PATH = "/spec/amd0905is-libs/64:/spec/amd0905is-libs/32"

NCPUS = "6"

PGI_HUGE_PAGES = "450"

The x86 Open64 Compiler Suite is only available from (and supported by) AMD at <http://developer.amd.com/cpu/open64>.

To ensure system stability, a 550W (minimum) ATX power supply [4-pin (+12V), 8-pin (+12V) and 24-pin] are required.

Product description can be obtained at:

<http://www.supermicro.com/Aplus/motherboard/Opteron2000/MCP55/H8DA3-2.cfm>

Base Compiler Invocation

C benchmarks:

pgcc

C++ benchmarks:

pgcpp

Fortran benchmarks:

pgf95

Benchmarks using both Fortran and C:

pgcc pgf95

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 -Mnomain
 436.cactusADM: -DSPEC_CPU_LP64 -Mnomain
 437.leslie3d: -DSPEC_CPU_LP64
 444.namd: -DSPEC_CPU_LP64
 447.deallI: -DSPEC_CPU_LP64
 450.soplex: -DSPEC_CPU_LP64
 453.povray: -DSPEC_CPU_LP64
 454.calculix: -DSPEC_CPU_LP64 -Mnomain
 459.GemsFDTD: -DSPEC_CPU_LP64
 465.tonto: -DSPEC_CPU_LP64
 470.lbm: -DSPEC_CPU_LP64
 481.wrf: -DSPEC_CPU_LP64 -DSPEC_CPU_CASE_FLAG -DSPEC_CPU_LINUX

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Base Portability Flags (Continued)

482.sphinx3: -DSPEC_CPU_LP64

Base Optimization Flags

C benchmarks:

-fastsse -Msmartalloc=huge -Mfprelaxed -Mipa=fast -Mipa=inline
-tp shanghai-64 -Bstatic_pgi

C++ benchmarks:

-fastsse -Msmartalloc=huge -Mfprelaxed --zc_eh -Mipa=fast
-Mipa=inline -tp shanghai-64 -Bstatic_pgi

Fortran benchmarks:

-fastsse -Msmartalloc=huge -Mfprelaxed -Mvect=short -Mipa=fast
-Mipa=inline -tp shanghai-64 -Bstatic_pgi

Benchmarks using both Fortran and C:

-fastsse -Msmartalloc=huge -Mfprelaxed -Mipa=fast -Mipa=inline
-tp shanghai-64 -Mvect=short -Bstatic_pgi

Base Other Flags

C benchmarks:

-Mipa=jobs:4

C++ benchmarks:

-Mipa=jobs:4

Fortran benchmarks:

-Mipa=jobs:4

Benchmarks using both Fortran and C:

-Mipa=jobs:4

Peak Compiler Invocation

C benchmarks:

pgcc

C++ benchmarks (except as noted below):

openCC

444.namd: pgc++

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Peak Compiler Invocation (Continued)

Fortran benchmarks (except as noted below):

openf95
410.bwaves: pgf95
434.zeusmp: pgf95
437.leslie3d: pgf95

Benchmarks using both Fortran and C (except as noted below):

pgcc pgf95
435.gromacs: 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 -Mnomain
437.leslie3d: -DSPEC_CPU_LP64
444.namd: -DSPEC_CPU_LP64
453.povray: -DSPEC_CPU_LP64
454.calculix: -DSPEC_CPU_LP64 -Mnomain
459.GemsFDTD: -DSPEC_CPU_LP64
465.tonto: -DSPEC_CPU_LP64
470.lbm: -DSPEC_CPU_LP64
481.wrf: -DSPEC_CPU_LP64 -DSPEC_CPU_CASE_FLAG -DSPEC_CPU_LINUX
482.sphinx3: -DSPEC_CPU_LP64

Peak Optimization Flags

C benchmarks:

433.milc: basepeak = yes
470.lbm: -fastsse -Msmartalloc=huge -Mprefetch=t0 -Mloop32
-Mfprefaxed -Mipa=fast -Mipa=inline -tp shanghai-64
-Bstatic_pgi
482.sphinx3: -Mphi=indirect(pass 1) -Mpfo=indirect(pass 2)
-Mipa=fast(pass 2) -Mipa=inline(pass 2) -fastsse
-Mfprefaxed -Msmartalloc -tp shanghai-64 -Bstatic_pgi

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Peak Optimization Flags (Continued)

C++ benchmarks:

444.namd: -Mpfi(pass 1) -Mpfo(pass 2) -Mipa=fast(pass 2)
 -Mipa=inline(pass 2) -fastsse -Munroll=n:4 -Munroll=m:8
 -Msmartalloc=huge -Mnodepchk -Mfprelaxed --zc_eh
 -tp shanghai-64 -Bstatic_pgi

447.dealIII: -march=barcelona -Ofast -static -INLINE:aggressive=on
 -LNO:opt=0 -Wf,-fno-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 -OPT:malloc_alg=1
 -CG:load_exe=0 -fno-exceptions -m32 -HP:bdt=2m

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: -fastsse -Msmartalloc -Mprefetch=nta -Mfprelaxed
 -Mipa=fast -Mipa=inline -tp shanghai-64 -Bstatic_pgi

416.gamess: -march=barcelona -fb_create fbdata(pass 1)
 -fb_opt fbdata(pass 2) -O2 -OPT:Ofast -OPT:ro=3
 -OPT:unroll_size=256 -HP:bdt=2m:heap=2m

434.zeusmp: -fastsse -Mfprelaxed -Mprefetch=distance:8 -Mprefetch=t0
 -Msmartalloc=huge -Msmartalloc=hugebss -Mipa=fast
 -Mipa=inline -tp shanghai-64 -Bstatic_pgi

437.leslie3d: -Mpfi=indirect(pass 1) -Mpfo=indirect(pass 2)
 -Mipa=fast(pass 2) -Mipa=inline(pass 2) -fastsse
 -Mvect=fuse -Msmartalloc=huge -Mprefetch=distance:8
 -Mprefetch=t0 -Mfprelaxed -tp shanghai-64 -Bstatic_pgi

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

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

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Peak Optimization Flags (Continued)

436.cactusADM: -fastsse -Mconcur -Msmartalloc=huge -Mfprelaxed -Mipa=fast
-Mipa=inline -tp shanghai-64 -Bstatic_pgi

454.calculix: -Mphi=indirect(pass 1) -Mpfo=indirect(pass 2)
-Mipa=fast(pass 2) -Mipa=inline(pass 2) -fastsse
-Mvect=short -Msmartalloc=huge -Mprefetch=t0 -Mpre
-Mfprelaxed -tp shanghai-64 -Bstatic_pgi

481.wrf: -fastsse -Mvect=noaltcode -Msmartalloc=huge
-Mprefetch=distance:8 -Mfprelaxed -tp shanghai-64
-Bstatic_pgi

Peak Other Flags

C benchmarks:

-Mipa=jobs:4(pass 2)

C++ benchmarks:

444.namd: -Mipa=jobs:4(pass 2)

Fortran benchmarks:

410.bwaves: -Mipa=jobs:4

434.zeusmp: -Mipa=jobs:4

437.leslie3d: -Mipa=jobs:4(pass 2)

Benchmarks using both Fortran and C:

436.cactusADM: -Mipa=jobs:4

454.calculix: -Mipa=jobs:4(pass 2)

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

<http://www.spec.org/cpu2006/flags/amd-platform.20090710.html>

http://www.spec.org/cpu2006/flags/pgi80_linux_flags.20090914.html

<http://www.spec.org/cpu2006/flags/x86-open64-4.2.2-flags-revE.html>

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

<http://www.spec.org/cpu2006/flags/amd-platform.20090710.xml>

http://www.spec.org/cpu2006/flags/pgi80_linux_flags.20090914.xml

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