SPEC® CFP2006 Result

Copyright 2006-2014 Standard Performance Evaluation Corporation

Supermicro

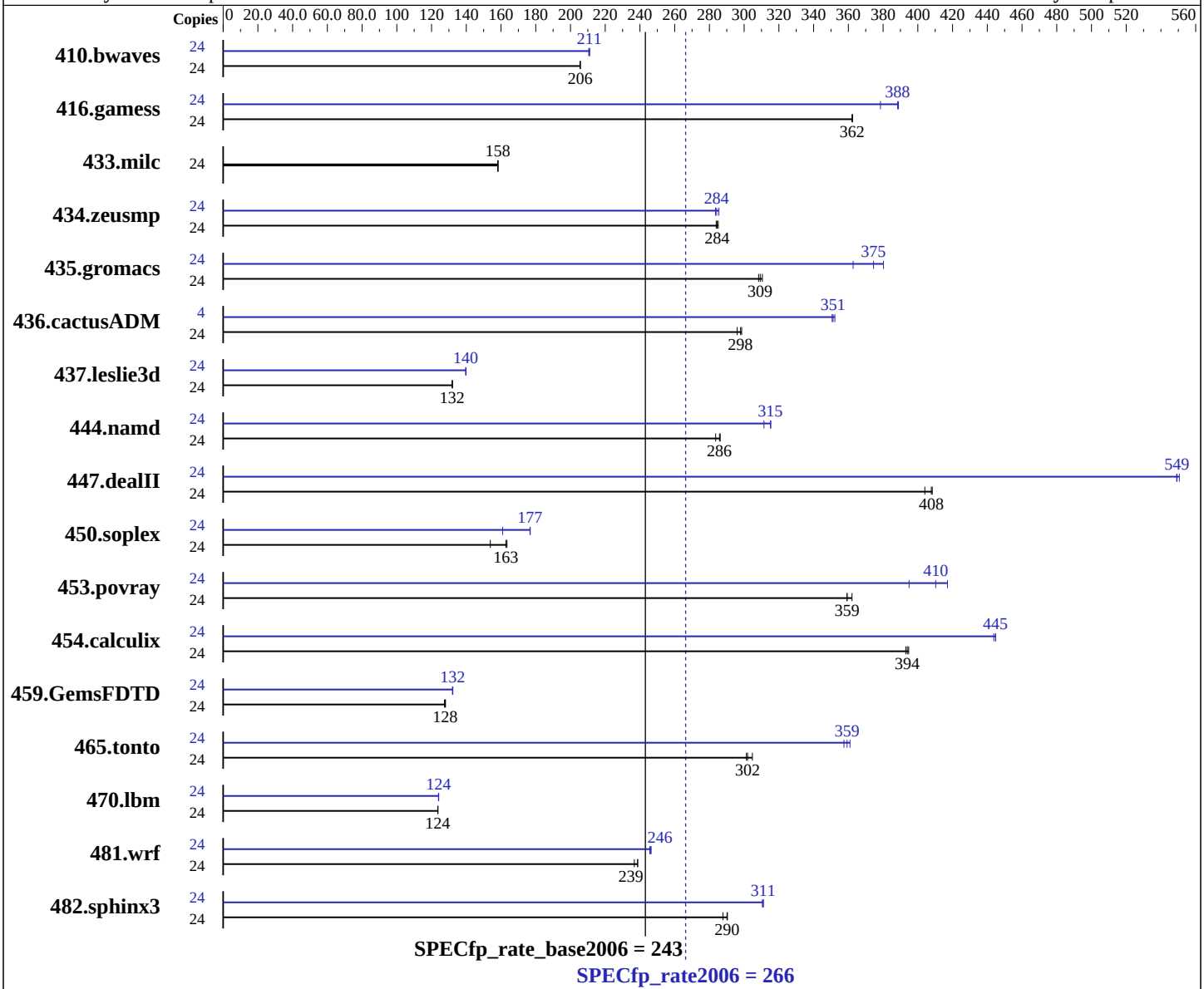
Motherboard H8QI6-F, AMD Opteron 8431

SPECfp®_rate2006 = 266

SPECfp_rate_base2006 = 243

CPU2006 license: 001176
Test sponsor: Supermicro
Tested by: Supermicro

Test date: Nov-2009
Hardware Availability: Jun-2009
Software Availability: Apr-2009



Hardware

CPU Name:	AMD Opteron 8431
CPU Characteristics:	
CPU MHz:	2400
FPU:	Integrated
CPU(s) enabled:	24 cores, 4 chips, 6 cores/chip
CPU(s) orderable:	2,4 chips
Primary Cache:	64 KB I + 64 KB D on chip per core
Secondary Cache:	512 KB I+D on chip per core

Continued on next page

Software

Operating System:	Red Hat Enterprise Linux Server release 5.4, Advanced Platform, Kernel 2.6.18-164.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

Continued on next page

SPEC CFP2006 Result

Copyright 2006-2014 Standard Performance Evaluation Corporation

Supermicro

Motherboard H8QI6-F, AMD Opteron 8431

SPECfp_rate2006 = 266

SPECfp_rate_base2006 = 243

CPU2006 license: 001176
Test sponsor: Supermicro
Tested by: Supermicro

Test date: Nov-2009
Hardware Availability: Jun-2009
Software Availability: Apr-2009

L3 Cache: 6 MB I+D on chip per chip
Other Cache: None
Memory: 64 GB (16x4 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	24	1586	206	1586	206	**1586**	**206**	24	**1546**	**211**	1546	211	1549	210
416.gamess	24	1297	362	1297	362	**1297**	**362**	24	**1210**	**388**	1208	389	1242	378
433.milc	24	1393	158	1392	158	**1392**	**158**	24	1393	158	1392	158	**1392**	**158**
434.zeusmp	24	769	284	**768**	**284**	766	285	24	770	283	765	285	**768**	**284**
435.gromacs	24	**554**	**309**	552	310	556	308	24	**458**	**375**	472	363	451	380
436.cactusADM	24	969	296	**963**	**298**	961	299	4	136	351	136	352	**136**	**351**
437.leslie3d	24	**1710**	**132**	1710	132	1709	132	24	1615	140	1613	140	**1614**	**140**
444.namd	24	679	284	**673**	**286**	672	286	24	618	311	**611**	**315**	610	315
447.dealII	24	**673**	**408**	680	404	672	408	24	500	549	499	551	**500**	**549**
450.soplex	24	1301	154	**1229**	**163**	1225	163	24	1244	161	1132	177	**1133**	**177**
453.povray	24	355	359	353	362	**355**	**359**	24	323	395	306	417	**311**	**410**
454.calculix	24	504	393	**503**	**394**	502	395	24	**445**	**445**	445	445	446	444
459.GemsFDTD	24	1990	128	1999	127	**1990**	**128**	24	**1926**	**132**	1929	132	1925	132
465.tonto	24	775	305	**782**	**302**	784	301	24	654	361	661	357	**657**	**359**
470.lbm	24	2668	124	**2667**	**124**	2667	124	24	2659	124	**2659**	**124**	2656	124
481.wrf	24	1132	237	1123	239	**1123**	**239**	24	1088	246	**1090**	**246**	1091	246
482.sphinx3	24	1611	290	**1612**	**290**	1625	288	24	1507	310	1504	311	**1504**	**311**

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=10800 in /etc/sysctl.conf
mount -t hugetlbfs nodev /mnt/hugepages
```

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

System was tested in an open environment.
To ensure system stability, a 1000W (minimum) ATX power supply
[ 8-pin & 8-pin (+12V) and 24-pin are required ]

Product description can be obtained at:
http://www.supermicro.com/Aplus/motherboard/Opteron8000/SR56x0/H8QI6-F.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.dealII: -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

Continued on next page

Base Portability Flags (Continued)

481.wrf: -DSPEC_CPU_LP64 -DSPEC_CPU_CASE_FLAG -DSPEC_CPU_LINUX
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

Continued on next page

Peak Compiler Invocation (Continued)

444.namd: pgcpp

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
-Mfprelaxed -Mipa=fast -Mipa=inline -tp shanghai-64
-Bstatic_pgi

482.sphinx3: -Mpfi=indirect(pass 1) -Mpfo=indirect(pass 2)
-Mipa=fast(pass 2) -Mipa=inline(pass 2) -fastsse
-Mfprelaxed -Msmartalloc -tp shanghai-64 -Bstatic_pgi

Continued on next page

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.dealII: -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:

Continued on next page

Peak Optimization Flags (Continued)

435.gromacs: `-march=barcelona -Ofast -OPT:rsqrt=2 -HP:bdt=2m:heap=2m`

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

454.calculix: `-Mpfi=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-revA.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-revA.xml
http://www.spec.org/cpu2006/flags/x86-open64-4.2.2-flags-revE.xml

Copyright 2006-2014 Standard Performance Evaluation Corporation

Supermicro

Motherboard H8QI6-F, AMD Opteron 8431

SPECfp_rate2006 = 266

SPECfp_rate_base2006 = 243

CPU2006 license: 001176
Test sponsor: Supermicro
Tested by: Supermicro

Test date: Nov-2009
Hardware Availability: Jun-2009
Software Availability: Apr-2009

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 v1.1.
Report generated on Wed Jul 23 04:02:18 2014 by SPEC CPU2006 PS/PDF formatter v6932.
Originally published on 22 December 2009.