



SPEC® CFP2006 Result

Copyright 2006-2016 Standard Performance Evaluation Corporation

IBM Corporation

SPECfp®2006 = 13.8

IBM BladeCenter LS42 (AMD Opteron 8356)

SPECfp_base2006 = 12.2

CPU2006 license: 11

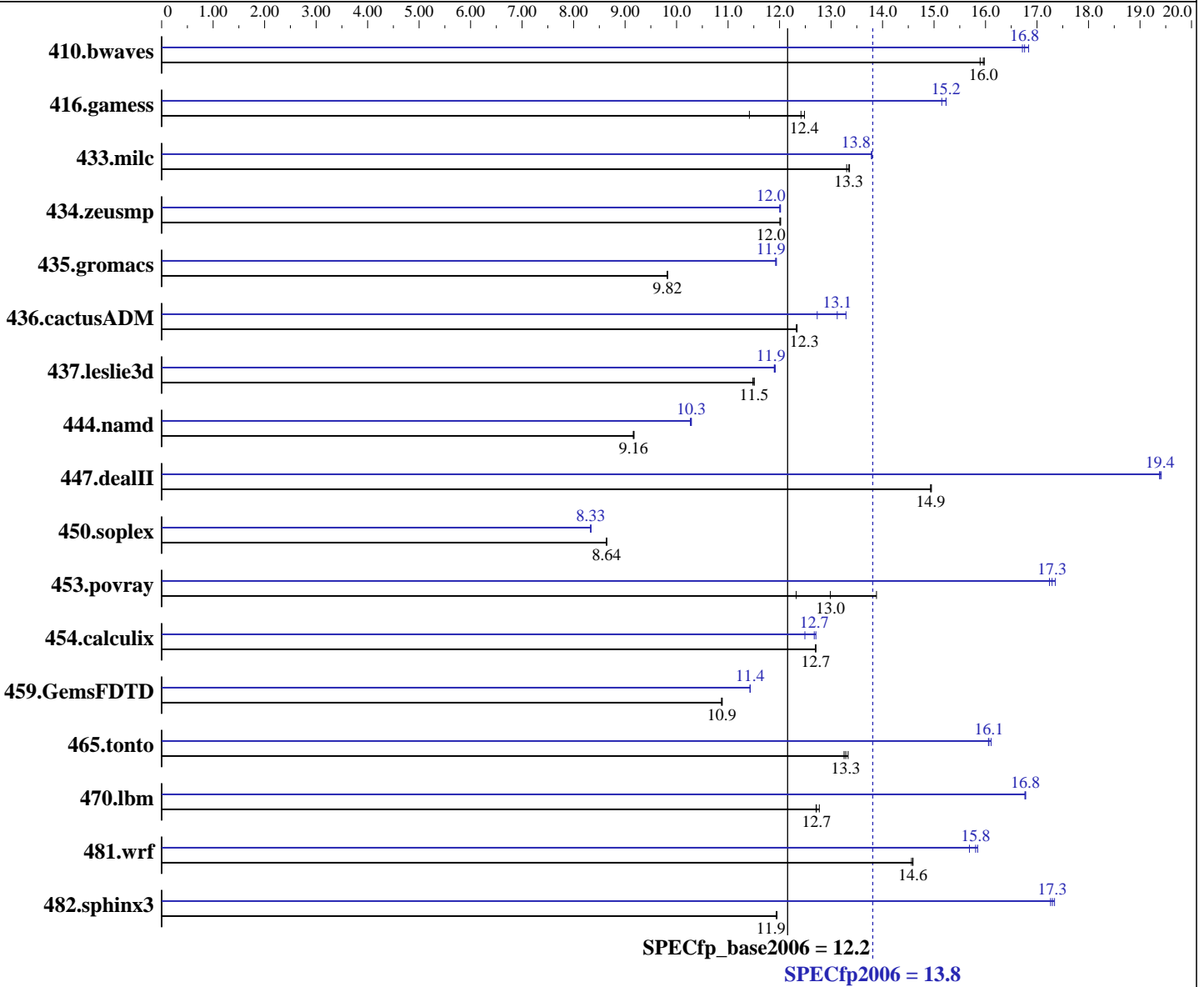
Test sponsor: IBM Corporation

Tested by: IBM Corporation

Test date: Jun-2008

Hardware Availability: Sep-2008

Software Availability: May-2008



Hardware

CPU Name: AMD Opteron 8356
 CPU Characteristics:
 CPU MHz: 2300
 FPU: Integrated
 CPU(s) enabled: 16 cores, 4 chips, 4 cores/chip
 CPU(s) orderable: 1,2,3,4 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: SuSE Linux Enterprise Server 10 (x86_64) SP1, Kernel 2.6.16.46-0.12-smp
 Compiler: PGI Server Complete Version 7.2 PathScale Compiler Suite Version 3.1
 Auto Parallel: No
 File System: ext2
 System State: Runlevel 3 (Full multiuser with network)
 Base Pointers: 64-bit
 Peak Pointers: 32/64-bit

Continued on next page



SPEC CFP2006 Result

Copyright 2006-2016 Standard Performance Evaluation Corporation

IBM Corporation

SPECfp2006 = **13.8**

IBM BladeCenter LS42 (AMD Opteron 8356)

SPECfp_base2006 = **12.2**

CPU2006 license: 11

Test sponsor: IBM Corporation

Tested by: IBM Corporation

Test date: Jun-2008

Hardware Availability: Sep-2008

Software Availability: May-2008

L3 Cache: 2 MB I+D on chip per chip
 Other Cache: None
 Memory: 64 GB (16 x 4 GB DDR2-6400 ECC)
 Disk Subsystem: 1 x 73 GB SAS, 10000 RPM
 Other Hardware: None

Other Software: None

Results Table

Benchmark	Base						Peak					
	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
410.bwaves	852	16.0	855	15.9	851	16.0	811	16.8	807	16.8	813	16.7
416.gamess	1577	12.4	1715	11.4	1568	12.5	1285	15.2	1285	15.2	1292	15.2
433.milc	690	13.3	688	13.3	687	13.4	666	13.8	666	13.8	666	13.8
434.zeusmp	758	12.0	758	12.0	757	12.0	757	12.0	758	12.0	757	12.0
435.gromacs	726	9.83	727	9.82	727	9.82	598	11.9	599	11.9	599	11.9
436.cactusADM	968	12.3	969	12.3	968	12.3	939	12.7	899	13.3	911	13.1
437.leslie3d	817	11.5	817	11.5	819	11.5	790	11.9	790	11.9	789	11.9
444.namd	876	9.16	874	9.17	875	9.16	780	10.3	779	10.3	781	10.3
447.dealII	766	14.9	766	14.9	765	14.9	590	19.4	589	19.4	590	19.4
450.soplex	965	8.64	965	8.64	965	8.64	1001	8.33	1000	8.34	1001	8.33
453.povray	432	12.3	383	13.9	410	13.0	307	17.4	309	17.2	308	17.3
454.calculix	650	12.7	649	12.7	650	12.7	651	12.7	649	12.7	660	12.5
459.GemsFDTD	976	10.9	976	10.9	974	10.9	929	11.4	928	11.4	928	11.4
465.tonto	741	13.3	742	13.3	738	13.3	611	16.1	613	16.1	612	16.1
470.lbm	1076	12.8	1081	12.7	1081	12.7	820	16.8	819	16.8	819	16.8
481.wrf	766	14.6	767	14.6	766	14.6	712	15.7	705	15.8	707	15.8
482.sphinx3	1632	11.9	1633	11.9	1631	12.0	1124	17.3	1127	17.3	1129	17.3

Results appear in the order in which they were run. Bold underlined text indicates a median measurement.

Operating System Notes

```
'numactl' was used to bind copies to the cores
'ulimit -s unlimited' was used to set environment stack size
'ulimit -l 4915200' was used to set environment locked pages in memory limit
Environment variable PGI_HUGE_PAGES set to 896
Set vm/nr_hugepages=14336 in /etc/sysctl.conf
mount -t hugetlbfs nodev /mnt/hugepages
Processor Performance States Disabled in BIOS
Memory ChipKill Disabled in BIOS
```



SPEC CFP2006 Result

Copyright 2006-2016 Standard Performance Evaluation Corporation

IBM Corporation

SPECfp2006 = 13.8

IBM BladeCenter LS42 (AMD Opteron 8356)

SPECfp_base2006 = 12.2

CPU2006 license: 11

Test date: Jun-2008

Test sponsor: IBM Corporation

Hardware Availability: Sep-2008

Tested by: IBM Corporation

Software Availability: May-2008

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
 481.wrf: -DSPEC_CPU_LP64 -DSPEC_CPU_CASE_FLAG -DSPEC_CPU_LINUX
 482.sphinx3: -DSPEC_CPU_LP64

Base Optimization Flags

C benchmarks:

-fast -Mipa=fast -Mipa=inline -Mfprelaxed -Msmartalloc=huge:150
-tp barcelona-64 -Bstatic_pgi

C++ benchmarks:

-fast -Mipa=fast -Mipa=inline -Mfprelaxed -Msmartalloc=huge:150
--zc_eh -tp barcelona-64 -Bstatic_pgi

Fortran benchmarks:

-fast -Mipa=fast -Mipa=inline -Mfprelaxed -Msmartalloc=huge:150
-tp barcelona-64 -Bstatic_pgi

Continued on next page



SPEC CFP2006 Result

Copyright 2006-2016 Standard Performance Evaluation Corporation

IBM Corporation

SPECfp2006 = 13.8

IBM BladeCenter LS42 (AMD Opteron 8356)

SPECfp_base2006 = 12.2

CPU2006 license: 11

Test date: Jun-2008

Test sponsor: IBM Corporation

Hardware Availability: Sep-2008

Tested by: IBM Corporation

Software Availability: May-2008

Base Optimization Flags (Continued)

Benchmarks using both Fortran and C:

-fast -Mipa=fast -Mipa=inline -Mfprelaxed -Msmartalloc=huge:150
-tp barcelona-64 -Bstatic_pgi

Base Other Flags

C benchmarks:

-w -Mipa=jobs:4

C++ benchmarks:

-w -Mipa=jobs:4

Fortran benchmarks:

-w -Mipa=jobs:4

Benchmarks using both Fortran and C:

-w -Mipa=jobs:4

Peak Compiler Invocation

C benchmarks (except as noted below):

pathcc

433.milc: pgcc

C++ benchmarks (except as noted below):

pathCC

444.namd: pgcpp

Fortran benchmarks (except as noted below):

pathf95

410.bwaves: pgf95

434.zeusmp: pgf95

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

pgcc pgf95

436.cactusADM: pathcc pathf95

481.wrf: pathcc pathf95



SPEC CFP2006 Result

Copyright 2006-2016 Standard Performance Evaluation Corporation

IBM Corporation

SPECfp2006 = 13.8

IBM BladeCenter LS42 (AMD Opteron 8356)

SPECfp_base2006 = 12.2

CPU2006 license: 11

Test date: Jun-2008

Test sponsor: IBM Corporation

Hardware Availability: Sep-2008

Tested by: IBM Corporation

Software Availability: May-2008

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 -Mnomain
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 -Mnomain
459.GemsFDTD: -DSPEC_CPU_LP64
465.tonto: -DSPEC_CPU_LP64
470.lbm: -DSPEC_CPU_LP64
481.wrf: -DSPEC_CPU_LP64 -DSPEC_CPU_LINUX -fno-second-underscore
482.sphinx3: -DSPEC_CPU_LP64

```

Peak Optimization Flags

C benchmarks:

```

433.milc: -fastsse -Msmartalloc=huge:150 -Msafeptr -Mfprelaxed
-Mipa=inline -Mipa=arg -Mipa=const -Mipa=ptr -Mipa=shape
-tp barcelona-64 -Bstatic_pgi

```

```

470.lbm: -march=barcelona -Ofast -m3dnow

```

```

482.sphinx3: -march=barcelona -Ofast

```

C++ benchmarks:

```

444.namd: -Mpfi(pass 1) -Mipa=fast(pass 2) -Mipa=inline(pass 2)
-Mpfo(pass 2) -fast -Mfprelaxed -Msmartalloc=huge:150
--zc_eh -Mnodepchk -Munroll=n:4 -Munroll=m:8
-tp barcelona-64 -Bstatic_pgi

```

```

447.dealIII: -march=barcelona -Ofast -static -INLINE:aggressive=on
-OPT:malloc_alg=1 -m32 -fno-exceptions

```

```

450.soplex: -march=barcelona -fb_create fbdata(pass 1)
-fb_opt fbdata(pass 2) -m32 -O3 -TENV:frame_pointer=off
-LNO:prefetch=1

```

```

453.povray: -march=barcelona -fb_create fbdata(pass 1)
-fb_opt fbdata(pass 2) -Ofast -CG:load_exe=0

```

Fortran benchmarks:

Continued on next page



SPEC CFP2006 Result

Copyright 2006-2016 Standard Performance Evaluation Corporation

IBM Corporation

SPECfp2006 = 13.8

IBM BladeCenter LS42 (AMD Opteron 8356)

SPECfp_base2006 = 12.2

CPU2006 license: 11

Test date: Jun-2008

Test sponsor: IBM Corporation

Hardware Availability: Sep-2008

Tested by: IBM Corporation

Software Availability: May-2008

Peak Optimization Flags (Continued)

410.bwaves: -Mphi(pass 1) -Mipa=fast(pass 2) -Mipa=inline(pass 2)
-Mpfo(pass 2) -fastsse -Mfprelaxed -Msmartalloc
-Mprefetch=distance:12 -Mprefetch=nta -tp barcelona-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

434.zeusmp: -fastsse -Mfprelaxed -Msmartalloc=huge:150 -Mipa=fast
-Mipa=inline -tp barcelona-64 -Bstatic_pgi

437.leslie3d: -march=barcelona -Ofast -m3dnow -OPT:unroll_size=256
-CG:load_exe=0 -OPT:malloc_alg=1

459.GemsFDTD: -march=barcelona -Ofast -LNO:fission=2 -LNO:simd=2
-OPT:malloc_alg=1

465.tonto: -march=barcelona -Ofast -OPT:malloc_alg=1
-OPT:alias=no_f90_pointer_alias -LNO:blocking=off
-CG:load_exe=1 -IPA:plimit=525

Benchmarks using both Fortran and C:

435.gromacs: -fast -Mfpapprox=rsqrt -Mipa=fast -Mipa=inline -Mfprelaxed
-Msmartalloc=huge:150 -tp barcelona-64 -Bstatic_pgi

436.cactusADM: -march=barcelona -fb_create fbdata(pass 1)
-fb_opt fbdata(pass 2) -Ofast -WOPT:aggstr=0

454.calculix: -fastsse -Mfprelaxed -Msmartalloc=huge:150 -Mipa=fast
-Mipa=inline -tp barcelona-64 -Bstatic_pgi

481.wrf: -march=barcelona -Ofast -LNO:blocking=off
-LNO:prefetch_ahead=10 -OPT:malloc_alg=1 -m3dnow
-LANG:copyinout=off -IPA:callee_limit=5000

Peak Other Flags

C benchmarks:

433.milc: -w -Mipa=jobs:4

C++ benchmarks:

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

Continued on next page



SPEC CFP2006 Result

Copyright 2006-2016 Standard Performance Evaluation Corporation

IBM Corporation

SPECfp2006 = 13.8

IBM BladeCenter LS42 (AMD Opteron 8356)

SPECfp_base2006 = 12.2

CPU2006 license: 11

Test date: Jun-2008

Test sponsor: IBM Corporation

Hardware Availability: Sep-2008

Tested by: IBM Corporation

Software Availability: May-2008

Peak Other Flags (Continued)

Fortran benchmarks:

410.bwaves: -w -Mipa=jobs:4(pass 2)

434.zeusmp: -w -Mipa=jobs:4

Benchmarks using both Fortran and C:

435.gromacs: -w -Mipa=jobs:4

454.calculix: -w -Mipa=jobs:4

The flags file that was used to format this result can be browsed at

<http://www.spec.org/cpu2006/flags/amd123GH-flags.html>

You can also download the XML flags source by saving the following link:

<http://www.spec.org/cpu2006/flags/amd123GH-flags.xml>

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 v1.0.
Report generated on Tue Sep 13 11:32:32 2016 by SPEC CPU2006 PS/PDF formatter v6932.
Originally published on 8 July 2008.