



SPEC® CFP2006 Result

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IBM Corporation

SPECfp®_rate2006 = 57.1

IBM BladeCenter LS41 (AMD Opteron 8220)

SPECfp_rate_base2006 = 54.7

CPU2006 license: 11

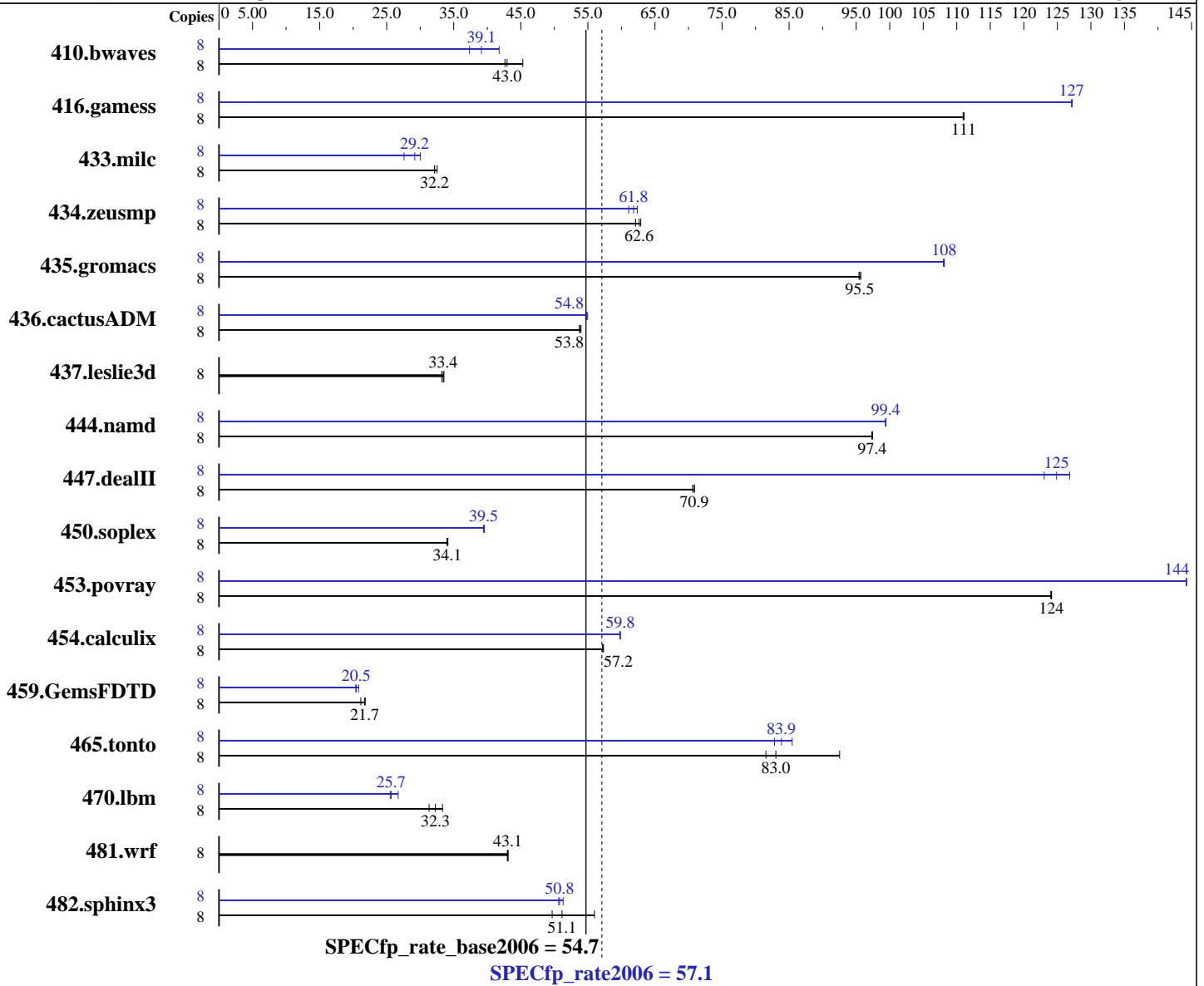
Test date: Feb-2007

Test sponsor: IBM Corporation

Hardware Availability: Feb-2007

Tested by: IBM Corporation

Software Availability: Aug-2006



Hardware

CPU Name: AMD Opteron 8220
 CPU Characteristics: 2800
 CPU MHz: Integrated
 FPU: 8 cores, 4 chips, 2 cores/chip
 CPU(s) enabled: 1, 2, 4 chips
 CPU(s) orderable: 64 KB I + 64 KB D on chip per core
 Primary Cache: 1 MB I+D on chip per core
 Secondary Cache:

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Software

Operating System: SLES9 SP3 for AMD64/EM64T
 Compiler: QLogic PathScale Compiler Suite 2.5
 Auto Parallel: No
 File System: ext3
 System State: Multi-user, run level 3
 Base Pointers: 64-bit
 Peak Pointers: 32/64-bit
 Other Software: None



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L3 Cache: None
Other Cache: None
Memory: 32 GB (16 x 2GB DDR2-5300 ECC)
Disk Subsystem: 1 x 74 GB SAS, 10000 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	8	2400	45.3	2550	42.6	<u>2531</u>	<u>43.0</u>	8	2603	41.8	2911	37.3	<u>2778</u>	<u>39.1</u>
416.gamess	8	1412	111	<u>1410</u>	<u>111</u>	1410	111	8	1232	127	<u>1232</u>	<u>127</u>	1231	127
433.milc	8	2258	32.5	2287	32.1	<u>2284</u>	<u>32.2</u>	8	2446	30.0	2662	27.6	<u>2516</u>	<u>29.2</u>
434.zeusmp	8	1158	62.9	<u>1162</u>	<u>62.6</u>	1172	62.1	8	1167	62.4	1192	61.1	<u>1178</u>	<u>61.8</u>
435.gromacs	8	599	95.4	597	95.7	<u>598</u>	<u>95.5</u>	8	529	108	<u>528</u>	<u>108</u>	528	108
436.cactusADM	8	1771	54.0	1778	53.8	<u>1777</u>	<u>53.8</u>	8	1739	55.0	<u>1743</u>	<u>54.8</u>	1744	54.8
437.leslie3d	8	2263	33.2	2242	33.5	<u>2249</u>	<u>33.4</u>	8	2263	33.2	2242	33.5	<u>2249</u>	<u>33.4</u>
444.namd	8	659	97.3	658	97.4	<u>659</u>	<u>97.4</u>	8	646	99.3	645	99.5	<u>645</u>	<u>99.4</u>
447.dealII	8	<u>1291</u>	<u>70.9</u>	1291	70.9	1296	70.6	8	722	127	744	123	<u>733</u>	<u>125</u>
450.soplex	8	1963	34.0	1955	34.1	<u>1959</u>	<u>34.1</u>	8	<u>1691</u>	<u>39.5</u>	1686	39.6	1692	39.4
453.povray	8	343	124	343	124	<u>343</u>	<u>124</u>	8	<u>295</u>	<u>144</u>	295	144	295	144
454.calculix	8	<u>1153</u>	<u>57.2</u>	1151	57.3	1154	57.2	8	<u>1103</u>	<u>59.8</u>	1105	59.7	1103	59.9
459.GemsFDTD	8	4014	21.1	3893	21.8	<u>3908</u>	<u>21.7</u>	8	<u>4149</u>	<u>20.5</u>	4161	20.4	4077	20.8
465.tonto	8	851	92.5	<u>948</u>	<u>83.0</u>	965	81.5	8	<u>939</u>	<u>83.9</u>	921	85.5	950	82.8
470.lbm	8	3509	31.3	3298	33.3	<u>3408</u>	<u>32.3</u>	8	<u>4283</u>	<u>25.7</u>	4306	25.5	4115	26.7
481.wrf	8	<u>2075</u>	<u>43.1</u>	2079	43.0	2073	43.1	8	<u>2075</u>	<u>43.1</u>	2079	43.0	2073	43.1
482.sphinx3	8	2785	56.0	<u>3049</u>	<u>51.1</u>	3139	49.7	8	3039	51.3	<u>3070</u>	<u>50.8</u>	3079	50.6

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

Operating System Notes

taskset utility used to bind CPU(s) to processes

Base Compiler Invocation

C benchmarks:
pathcc

C++ benchmarks:
pathCC

Fortran benchmarks:
pathf95

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Base Compiler Invocation (Continued)

Benchmarks using both Fortran and C:
pathcc pathf95

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 -DSPEC_CPU_TABLE_WORKAROUND
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 -fno-second-underscore
482.sphinx3: -DSPEC_CPU_LP64

```

Base Optimization Flags

C benchmarks:
-march=auto -Ofast

C++ benchmarks:
-march=auto -Ofast

Fortran benchmarks:
-march=auto -Ofast

Benchmarks using both Fortran and C:
-march=auto -Ofast

Base Other Flags

C benchmarks:
-IPA:max_jobs=2

C++ benchmarks:
-IPA:max_jobs=2

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Base Other Flags (Continued)

Fortran benchmarks:

-IPA:max_jobs=2

Benchmarks using both Fortran and C:

-IPA:max_jobs=2

Peak Compiler Invocation

C benchmarks:

pathcc

C++ benchmarks:

pathCC

Fortran benchmarks:

pathf95

Benchmarks using both Fortran and C:

pathcc pathf95

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.lelie3d: -DSPEC_CPU_LP64
 444.namd: -DSPEC_CPU_LP64
 447.dealII: -DSPEC_CPU_TABLE_WORKAROUND
 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 -fno-second-underscore
 482.sphinx3: -DSPEC_CPU_LP64

Peak Optimization Flags

C benchmarks:

-march=auto -fb_create fbdata(pass 1) -fb_opt fbdata(pass 2) -Ofast

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Peak Optimization Flags (Continued)

C++ benchmarks:

444.namd: -march=auto -fb_create fbdata(pass 1) -fb_opt fbdata(pass 2)
-Ofast

447.dealII: -march=auto -Ofast -m32 -fno-exceptions

450.soplex: -march=auto -fb_create fbdata(pass 1) -fb_opt fbdata(pass 2)
-m32 -O3 -OPT:IEEE_arith=3 -CG:load_exe=0 -CG:movnti=1
-LNO:minvariant=off -fno-exceptions

453.povray: -march=auto -fb_create fbdata(pass 1) -fb_opt fbdata(pass 2)
-Ofast -fno-fast-math

Fortran benchmarks:

410.bwaves: -march=auto -fb_create fbdata(pass 1) -fb_opt fbdata(pass 2)
-O3 -OPT:Ofast -OPT:IEEE_arith=3 -LNO:blocking=off
-LNO:ignore_feedback=off

416.gamess: -march=auto -fb_create fbdata(pass 1) -fb_opt fbdata(pass 2)
-O2 -OPT:Ofast -OPT:ro=3 -OPT:unroll_size=256

434.zeusmp: -march=auto -Ofast -CG:local_fwd_sched=on -LNO:blocking=off
-LNO:interchange=off -LNO:fu=10 -LNO:full_unroll_outer=on

437.leslie3d: basepeak = yes

459.GemsFDTD: -march=auto -Ofast -LNO:fission=2 -LNO:prefetch=0

465.tonto: -march=auto -Ofast -CG:local_fwd_sched=on -IPA:plimit=525

Benchmarks using both Fortran and C:

435.gromacs: -march=auto -O3 -OPT:rsqrt=2 -OPT:ro=3

436.cactusADM: -march=auto -fb_create fbdata(pass 1) -fb_opt fbdata(pass 2)
-O3 -LNO:prefetch_ahead=5 -LNO:ou_prod_max=10
-LNO:full_unroll=5 -ipa

454.calculix: -march=auto -Ofast -CG:prefetch=off -LNO:simd=0
-OPT:unroll_times_max=8 -WOPT:mem_opnds=on

481.wrf: basepeak = yes



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Peak Other Flags

C benchmarks:

-IPA:max_jobs=2

C++ benchmarks:

-IPA:max_jobs=2

Fortran benchmarks:

-IPA:max_jobs=2

Benchmarks using both Fortran and C:

-IPA:max_jobs=2

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

http://www.spec.org/cpu2006/flags/CPU2006_flags.20090714.17.html

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

http://www.spec.org/cpu2006/flags/CPU2006_flags.20090714.17.xml

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