



SPEC[®] CFP2006 Result

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IBM Corporation

SPECfp[®]_rate2006 = 39.7

IBM System x3655 (AMD Opteron 2212)

SPECfp_rate_base2006 = 37.8

CPU2006 license: 11

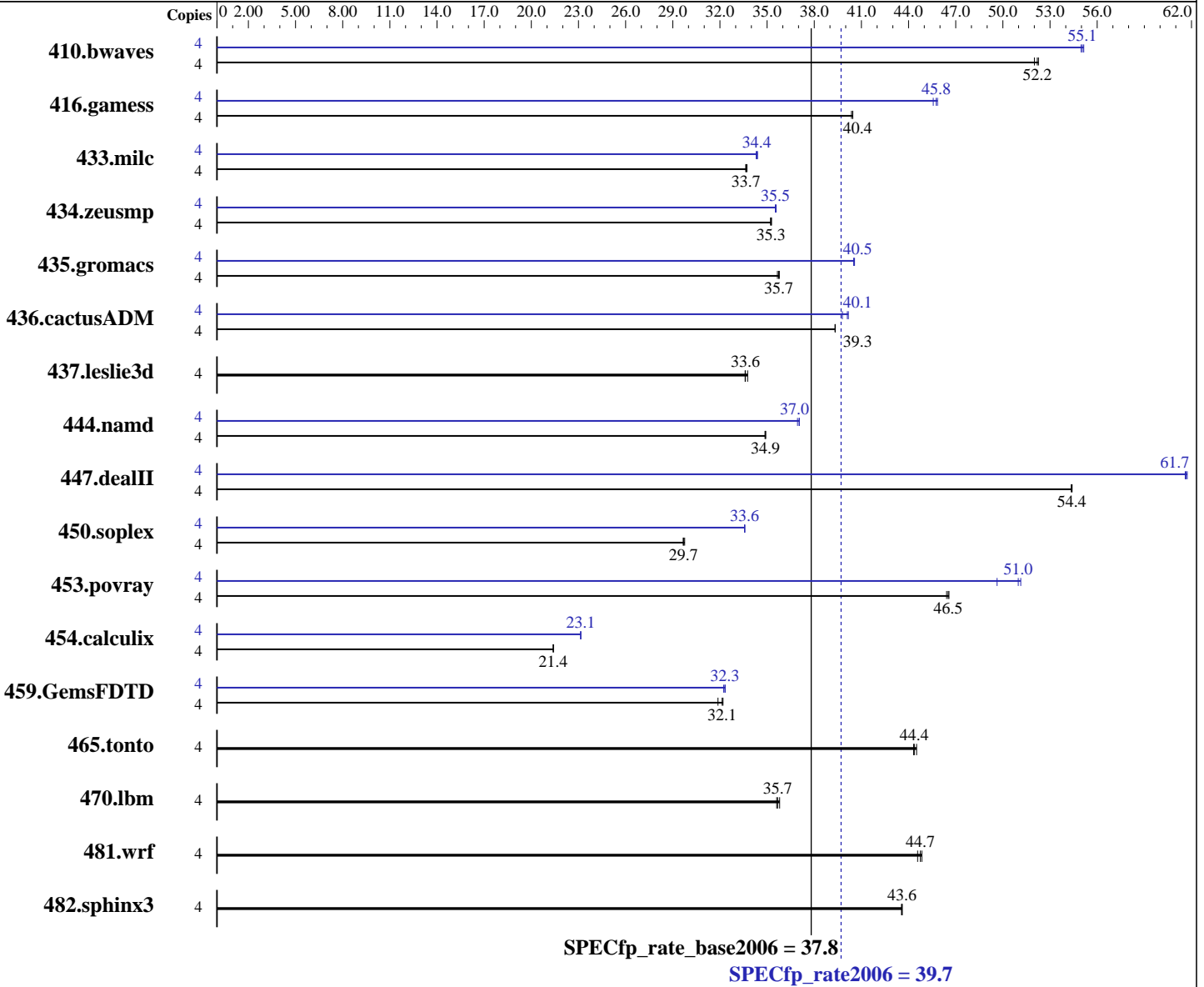
Test sponsor: IBM Corporation

Tested by: IBM Corporation

Test date: Jul-2007

Hardware Availability: Oct-2006

Software Availability: Mar-2007



Hardware

CPU Name: AMD Opteron 2212
 CPU Characteristics:
 CPU MHz: 2000
 FPU: Integrated
 CPU(s) enabled: 4 cores, 2 chips, 2 cores/chip
 CPU(s) orderable: 1, 2 chips
 Primary Cache: 64 KB I + 64 KB D on chip per core
 Secondary Cache: 1 MB I+D on chip per core

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Software

Operating System: SLES 10 (x86_64), 2.6.16.21-0.8-smp
 Compiler: QLogic PathScale Compiler Suite, Release 3.0
 Auto Parallel: No
 File System: ext3
 System State: Multi-user, run level 3
 Base Pointers: 64-bit
 Peak Pointers: 32/64-bit

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L3 Cache: None
Other Cache: None
Memory: 16 GB (8 x 2GB DDR2-5300 ECC)
Disk Subsystem: 1 x 36 GB SAS, 10000 RPM
Other Hardware: None

Other Software: None

Results Table

Benchmark	Base							Peak						
	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
410.bwaves	4	1045	52.0	1040	52.3	<u>1042</u>	<u>52.2</u>	4	989	55.0	986	55.1	<u>987</u>	<u>55.1</u>
416.gamess	4	1940	40.4	<u>1937</u>	<u>40.4</u>	1936	40.5	4	1719	45.6	1708	45.8	<u>1712</u>	<u>45.8</u>
433.milc	4	<u>1091</u>	<u>33.7</u>	1089	33.7	1092	33.6	4	1068	34.4	<u>1069</u>	<u>34.4</u>	1070	34.3
434.zeusmp	4	1034	35.2	<u>1032</u>	<u>35.3</u>	1032	35.3	4	1023	35.6	1025	35.5	<u>1024</u>	<u>35.5</u>
435.gromacs	4	801	35.7	798	35.8	<u>799</u>	<u>35.7</u>	4	<u>705</u>	<u>40.5</u>	705	40.5	704	40.6
436.cactusADM	4	1215	39.3	<u>1215</u>	<u>39.3</u>	1216	39.3	4	<u>1192</u>	<u>40.1</u>	1190	40.2	1201	39.8
437.leslie3d	4	<u>1118</u>	<u>33.6</u>	1119	33.6	1114	33.8	4	<u>1118</u>	<u>33.6</u>	1119	33.6	1114	33.8
444.namd	4	919	34.9	920	34.9	<u>919</u>	<u>34.9</u>	4	869	36.9	866	37.0	<u>866</u>	<u>37.0</u>
447.dealII	4	<u>842</u>	<u>54.4</u>	842	54.4	841	54.4	4	743	61.6	741	61.7	<u>742</u>	<u>61.7</u>
450.soplex	4	1125	29.7	1121	29.8	<u>1124</u>	<u>29.7</u>	4	<u>994</u>	<u>33.6</u>	993	33.6	994	33.6
453.povray	4	458	46.4	<u>457</u>	<u>46.5</u>	457	46.6	4	416	51.1	<u>417</u>	<u>51.0</u>	429	49.6
454.calculix	4	<u>1542</u>	<u>21.4</u>	1542	21.4	1543	21.4	4	1426	23.1	1426	23.1	<u>1426</u>	<u>23.1</u>
459.GemsFDTD	4	1331	31.9	1318	32.2	<u>1321</u>	<u>32.1</u>	4	1313	32.3	<u>1313</u>	<u>32.3</u>	1316	32.2
465.tonto	4	884	44.5	888	44.3	<u>887</u>	<u>44.4</u>	4	884	44.5	888	44.3	<u>887</u>	<u>44.4</u>
470.lbm	4	1535	35.8	<u>1541</u>	<u>35.7</u>	1543	35.6	4	1535	35.8	<u>1541</u>	<u>35.7</u>	1543	35.6
481.wrf	4	996	44.8	<u>998</u>	<u>44.7</u>	1002	44.6	4	996	44.8	<u>998</u>	<u>44.7</u>	1002	44.6
482.sphinx3	4	1790	43.5	<u>1789</u>	<u>43.6</u>	1788	43.6	4	1790	43.5	<u>1789</u>	<u>43.6</u>	1788	43.6

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

General Notes

taskset utility used to bind CPU(s) to processes
DSPEC_CPU_TABLE_WORKAROUND was used for portability when compiling 447.dealII
due to compilation being performed on SLES 9 SP3

Base Compiler Invocation

C benchmarks:
pathcc

C++ benchmarks:
pathCC

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Base Compiler Invocation (Continued)

Fortran benchmarks:
pathf95

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:
-Ofast

C++ benchmarks:
-Ofast

Fortran benchmarks:
-Ofast -OPT:malloc_alg=1

Benchmarks using both Fortran and C:
-Ofast -OPT:malloc_alg=1

Base Other Flags

C benchmarks:
-IPA:max_jobs=2

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Base Other Flags (Continued)

C++ benchmarks:

-IPA:max_jobs=2

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.leslie3d: -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



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Peak Optimization Flags

C benchmarks:

433.milc: -Ofast -CG:cflow=off -LNO:prefetch=1 -OPT:malloc_alg=1

470.lbm: basepeak = yes

482.sphinx3: basepeak = yes

C++ benchmarks:

444.namd: -fb_create fbdata(pass 1) -fb_opt fbdata(pass 2) -Ofast
-fno-exceptions

447.dealIII: -Ofast -INLINE:aggressive=on -LNO:opt=0 -OPT:alias=disjoint
-m32 -fno-exceptions

450.soplex: -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 -LNO:prefetch=1 -fno-exceptions

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

Fortran benchmarks:

410.bwaves: -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: -fb_create fbdata(pass 1) -fb_opt fbdata(pass 2) -O2
-OPT:Ofast -OPT:ro=3 -OPT:unroll_size=256

434.zeusmp: -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: -Ofast -LNO:fission=2 -LNO:prefetch=0

465.tonto: basepeak = yes

Benchmarks using both Fortran and C:

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

436.cactusADM: -fb_create fbdata(pass 1) -fb_opt fbdata(pass 2) -O3
-LNO:prefetch=3 -LNO:prefetch_ahead=5 -LNO:ou_prod_max=10
-LNO:full_unroll=5 -ipa

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Peak Optimization Flags (Continued)

454.calculix: -Ofast -LNO:simd=0 -WOPT:mem_opnds=on

481.wrf: basepeak = yes

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.20090714.13.html

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

http://www.spec.org/cpu2006/flags/CPU2006_flags.20090714.13.xml

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Tested with SPEC CPU2006 v1.0.

Report generated on Tue Sep 13 11:25:01 2016 by SPEC CPU2006 PS/PDF formatter v6932.

Originally published on 21 August 2007.