



SPEC® CFP2006 Result

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IBM Corporation

SPECfp®_rate2006 = 77.4

IBM BladeCenter LS41 (AMD Opteron 8214)

SPECfp_rate_base2006 = 73.2

CPU2006 license: 11

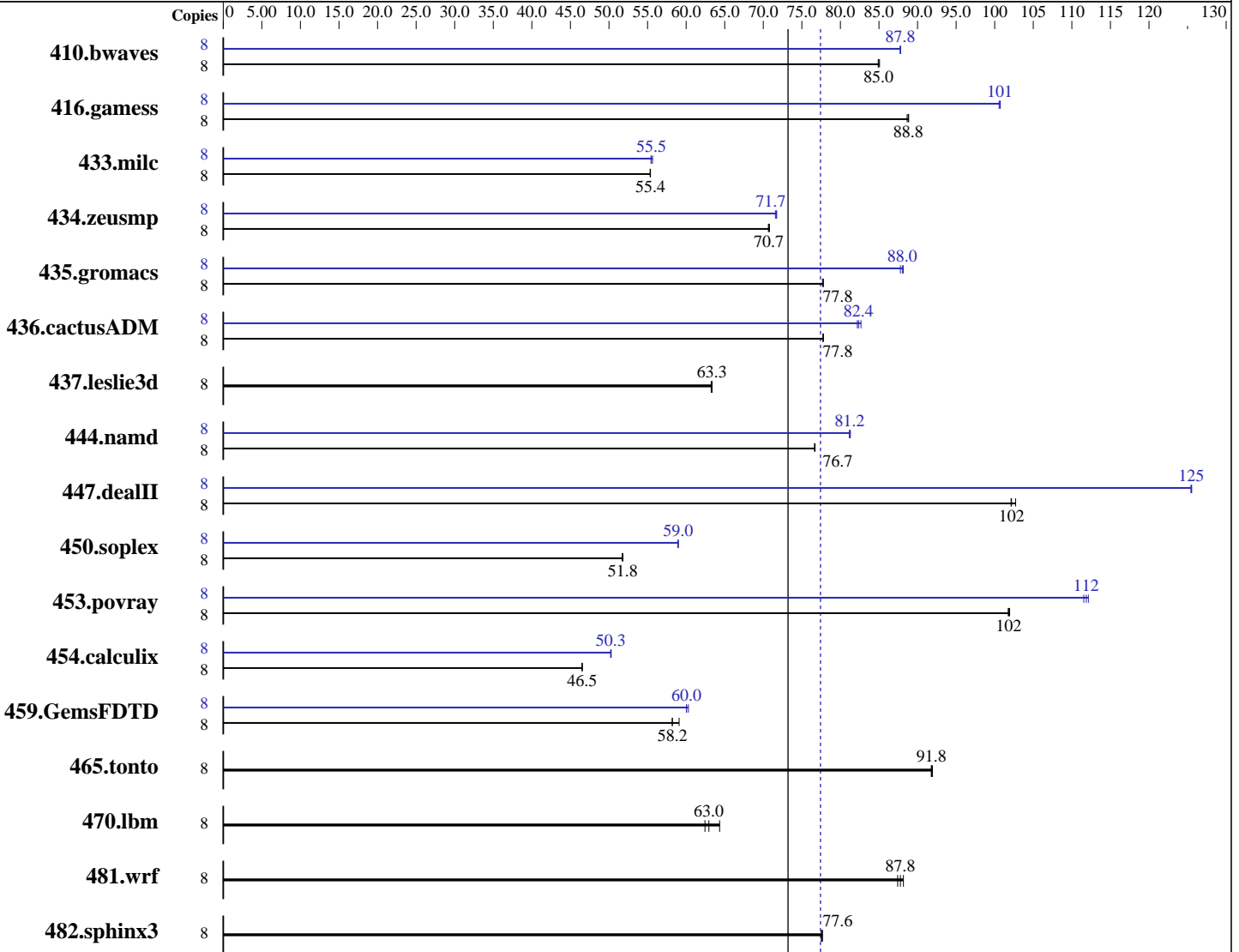
Test sponsor: IBM Corporation

Tested by: IBM Corporation

Test date: Jul-2007

Hardware Availability: Oct-2006

Software Availability: Mar-2007



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Hardware

CPU Name: AMD Opteron 8214
 CPU Characteristics: 2200
 CPU MHz: Integrated
 FPU: Integrated
 CPU(s) enabled: 8 cores, 4 chips, 2 cores/chip
 CPU(s) orderable: 1, 2, 3, 4 chips
 Primary Cache: 64 KB I + 64 KB D on chip per core
 Secondary Cache: 1 MB I+D on chip per core

Continued on next page

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

Continued on next page



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L3 Cache: None
Other Cache: None
Memory: 32 GB (16 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 | 8 | 1278 | 85.1 | <u>1280</u> | <u>85.0</u> | 1281 | 84.9 | 8 | 1238 | 87.8 | <u>1239</u> | <u>87.8</u> | 1239 | 87.7 |
| 416.gamess | 8 | <u>1764</u> | <u>88.8</u> | 1763 | 88.9 | 1767 | 88.6 | 8 | 1557 | 101 | <u>1556</u> | <u>101</u> | 1555 | 101 |
| 433.milc | 8 | 1327 | 55.3 | <u>1326</u> | <u>55.4</u> | 1326 | 55.4 | 8 | 1320 | 55.7 | <u>1323</u> | <u>55.5</u> | 1324 | 55.4 |
| 434.zeusmp | 8 | 1028 | 70.8 | <u>1029</u> | <u>70.7</u> | 1030 | 70.7 | 8 | 1015 | 71.7 | <u>1016</u> | <u>71.7</u> | 1017 | 71.6 |
| 435.gromacs | 8 | 734 | 77.8 | <u>735</u> | <u>77.8</u> | 735 | 77.7 | 8 | 651 | 87.8 | <u>649</u> | <u>88.0</u> | 648 | 88.2 |
| 436.cactusADM | 8 | <u>1229</u> | <u>77.8</u> | 1229 | 77.8 | 1230 | 77.7 | 8 | 1156 | 82.7 | 1163 | 82.2 | <u>1161</u> | <u>82.4</u> |
| 437.leslie3d | 8 | 1189 | 63.2 | 1187 | 63.4 | <u>1187</u> | <u>63.3</u> | 8 | 1189 | 63.2 | 1187 | 63.4 | <u>1187</u> | <u>63.3</u> |
| 444.namd | 8 | <u>837</u> | <u>76.7</u> | 836 | 76.7 | 837 | 76.7 | 8 | 789 | 81.3 | <u>790</u> | <u>81.2</u> | 791 | 81.1 |
| 447.dealII | 8 | 891 | 103 | <u>896</u> | <u>102</u> | 896 | 102 | 8 | 729 | 126 | 730 | 125 | <u>729</u> | <u>125</u> |
| 450.soplex | 8 | 1290 | 51.7 | <u>1288</u> | <u>51.8</u> | 1288 | 51.8 | 8 | 1131 | 59.0 | <u>1131</u> | <u>59.0</u> | 1133 | 58.9 |
| 453.povray | 8 | 418 | 102 | 418 | 102 | <u>418</u> | <u>102</u> | 8 | 382 | 112 | <u>380</u> | <u>112</u> | 380 | 112 |
| 454.calculix | 8 | 1418 | 46.5 | <u>1419</u> | <u>46.5</u> | 1419 | 46.5 | 8 | 1312 | 50.3 | <u>1313</u> | <u>50.3</u> | 1314 | 50.2 |
| 459.GemsFDTD | 8 | <u>1458</u> | <u>58.2</u> | 1436 | 59.1 | 1459 | 58.2 | 8 | <u>1414</u> | <u>60.0</u> | 1408 | 60.3 | 1414 | 60.0 |
| 465.tonto | 8 | 858 | 91.8 | 856 | 91.9 | <u>857</u> | <u>91.8</u> | 8 | 858 | 91.8 | 856 | 91.9 | <u>857</u> | <u>91.8</u> |
| 470.lbm | 8 | 1760 | 62.4 | 1708 | 64.3 | <u>1746</u> | <u>63.0</u> | 8 | 1760 | 62.4 | 1708 | 64.3 | <u>1746</u> | <u>63.0</u> |
| 481.wrf | 8 | <u>1018</u> | <u>87.8</u> | 1022 | 87.4 | 1014 | 88.2 | 8 | <u>1018</u> | <u>87.8</u> | 1022 | 87.4 | 1014 | 88.2 |
| 482.sphinx3 | 8 | <u>2009</u> | <u>77.6</u> | 2011 | 77.5 | 2007 | 77.7 | 8 | <u>2009</u> | <u>77.6</u> | 2011 | 77.5 | 2007 | 77.7 |

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

Continued on next page



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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

Continued on next page



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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

Continued on next page



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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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