# SPEC® CFP2006 Result



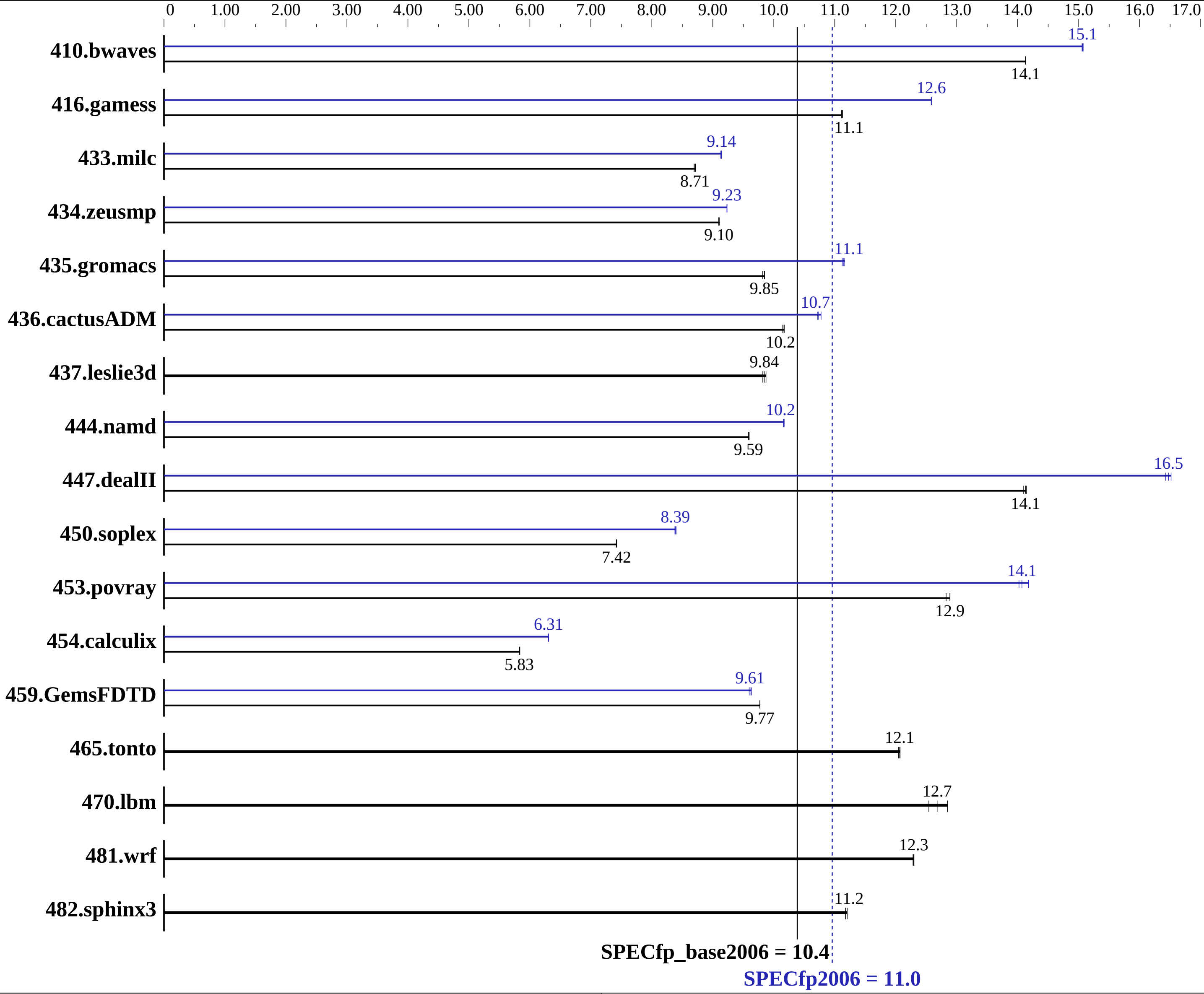
## IBM Corporation

IBM System x3755 (AMD Opteron 8214)

SPECfp®2006 = 11.0

SPECfp_base2006 = 10.4

| | | | |
|---|---|---|---|
| **CPU2006 license:** | 11 | **Test date:** | Jul-2007 |
| **Test sponsor:** | IBM Corporation | **Hardware Availability:** | Oct-2006 |
| **Tested by:** | IBM Corporation | **Software Availability:** | Mar-2007 |




### Hardware

| | |
|---|---|
| CPU Name: | AMD Opteron 8214 |
| CPU Characteristics: | |
| CPU MHz: | 2200 |
| 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 |

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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: 32 GB (16 x 2GB DDR2-5300 ECC)
Disk Subsystem: 1 x 36 GB SAS, 15000 RPM
Other Hardware: None

Other Software: None

## Results Table

| | Base | | | | | | Peak | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Benchmark | Seconds | Ratio | Seconds | Ratio | Seconds | Ratio | Seconds | Ratio | Seconds | Ratio | Seconds | Ratio |
| 410.bwaves | **962** | **14.1** | 962 | 14.1 | 962 | 14.1 | 903 | 15.1 | 902 | 15.1 | **902** | **15.1** |
| 416.gamess | **1760** | **11.1** | 1760 | 11.1 | 1762 | 11.1 | **1556** | **12.6** | 1556 | 12.6 | 1556 | 12.6 |
| 433.milc | 1053 | 8.72 | 1056 | 8.69 | **1054** | **8.71** | **1004** | **9.14** | 1006 | 9.12 | 1004 | 9.14 |
| 434.zeusmp | 1000 | 9.10 | **1000** | **9.10** | 999 | 9.11 | 986 | 9.23 | **986** | **9.23** | 986 | 9.23 |
| 435.gromacs | **725** | **9.85** | 725 | 9.85 | 727 | 9.82 | **641** | **11.1** | 642 | 11.1 | 640 | 11.2 |
| 436.cactusADM | 1179 | 10.1 | **1175** | **10.2** | 1175 | 10.2 | 1115 | 10.7 | **1114** | **10.7** | 1109 | 10.8 |
| 437.leslie3d | **955** | **9.84** | 952 | 9.87 | 957 | 9.82 | **955** | **9.84** | 952 | 9.87 | 957 | 9.82 |
| 444.namd | **837** | **9.59** | 836 | 9.60 | 837 | 9.58 | **789** | **10.2** | 790 | 10.2 | 789 | 10.2 |
| 447.dealII | 809 | 14.1 | 811 | 14.1 | **810** | **14.1** | 696 | 16.4 | **694** | **16.5** | 693 | 16.5 |
| 450.soplex | 1123 | 7.43 | **1124** | **7.42** | 1124 | 7.42 | 993 | 8.40 | 995 | 8.38 | **994** | **8.39** |
| 453.povray | 415 | 12.8 | **413** | **12.9** | 413 | 12.9 | **378** | **14.1** | 375 | 14.2 | 379 | 14.0 |
| 454.calculix | **1416** | **5.83** | 1414 | 5.84 | 1416 | 5.82 | **1308** | **6.31** | 1308 | 6.31 | 1308 | 6.31 |
| 459.GemsFDTD | **1086** | **9.77** | 1086 | 9.77 | 1086 | 9.77 | 1106 | 9.60 | **1104** | **9.61** | 1101 | 9.63 |
| 465.tonto | 817 | 12.0 | 815 | 12.1 | **816** | **12.1** | 817 | 12.0 | 815 | 12.1 | **816** | **12.1** |
| 470.lbm | 1069 | 12.8 | **1084** | **12.7** | 1095 | 12.5 | 1069 | 12.8 | **1084** | **12.7** | 1095 | 12.5 |
| 481.wrf | 908 | 12.3 | **909** | **12.3** | 909 | 12.3 | 908 | 12.3 | **909** | **12.3** | 909 | 12.3 |
| 482.sphinx3 | **1743** | **11.2** | 1740 | 11.2 | 1744 | 11.2 | **1743** | **11.2** | 1740 | 11.2 | 1744 | 11.2 |

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

## 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.dealII: -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



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 11:26:34 2016 by SPEC CPU2006 PS/PDF formatter v6932.
Originally published on 21 August 2007.