# SPEC® CFP2006 Result

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## IBM Corporation

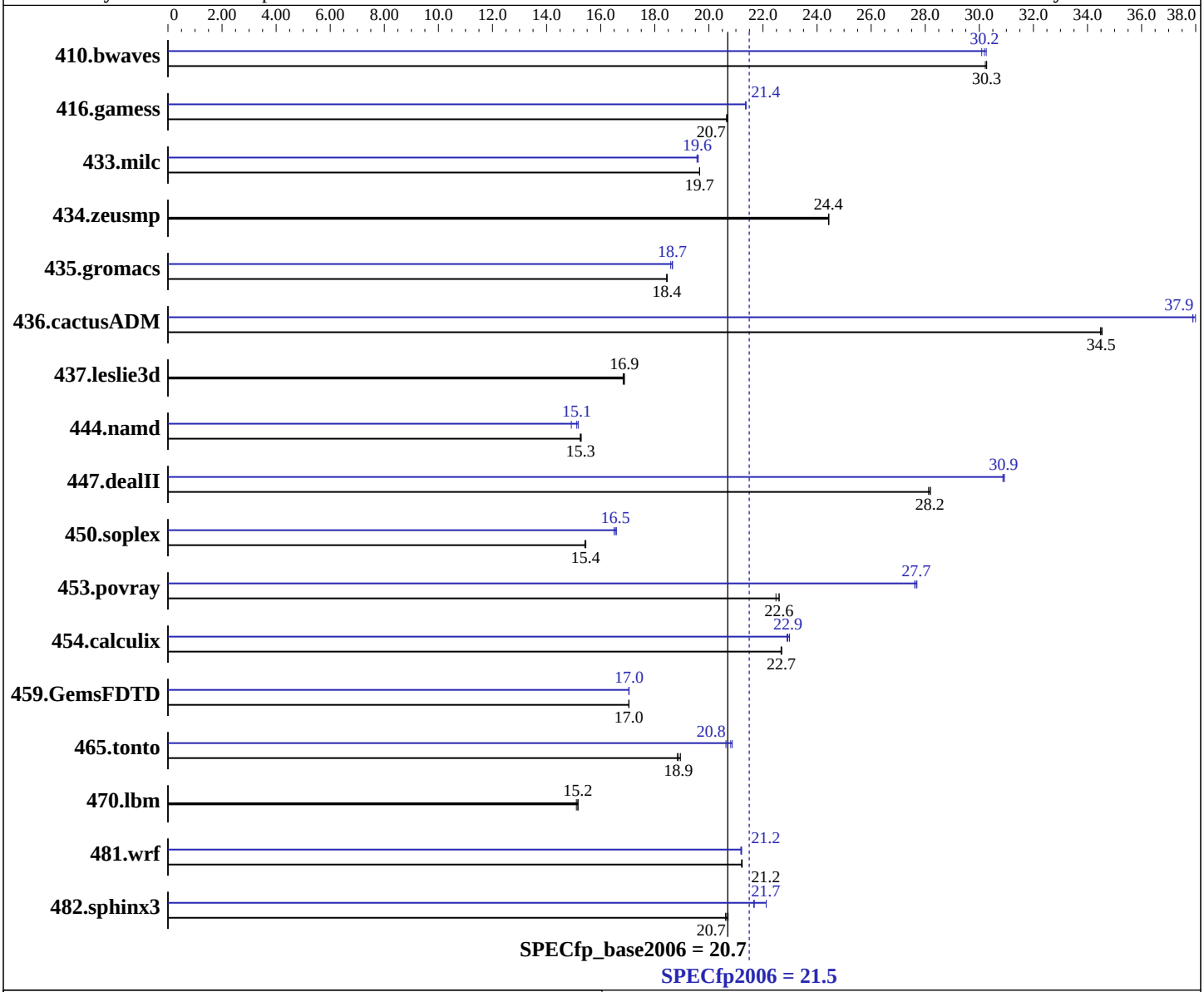
IBM System x3200 M2 (Intel Core 2 Duo E7400)

SPECfp®2006 = 21.5

SPECfp_base2006 = 20.7

**CPU2006 license:** 11
**Test sponsor:** IBM Corporation
**Tested by:** IBM Corporation

**Test date:** May-2009
**Hardware Availability:** Apr-2009
**Software Availability:** Nov-2008




### Hardware

| | |
|---|---|
| CPU Name: | Intel Core 2 Duo E7400 |
| CPU Characteristics: | 1067 MHz system bus |
| CPU MHz: | 2800 |
| FPU: | Integrated |
| CPU(s) enabled: | 2 cores, 1 chip, 2 cores/chip |
| CPU(s) orderable: | 1 chip |
| Primary Cache: | 32 KB I + 32 KB D on chip per core |
| Secondary Cache: | 3 MB I+D on chip per chip |

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### Software

| | |
|---|---|
| Operating System: | SuSE Linux Enterprise Server 10(x86_64) SP1, Kernel 2.6.16.46-0.12-smp |
| Compiler: | Intel C++ and Fortran Compiler 11.0 for Linux Build 20080930 Package ID: l_cproc_p_11.0.066, l_cprof_p_11.0.066 |
| Auto Parallel: | Yes |
| File System: | ReiserFS |
| System State: | Run level 3 (multi-user) |
| Base Pointers: | 64-bit |

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L3 Cache: None
Other Cache: None
Memory: 8 GB(4 x 2 GB DDR2-6400E ECC)
Disk Subsystem: 1 x 250 GB SATA, 7200RPM
Other Hardware: None

Peak Pointers: 32/64-bit
Other Software: Binutils 2.18.50.0.7.20080502

## Results Table

| Benchmark | Base | | | | | | Peak | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Seconds | Ratio | Seconds | Ratio | Seconds | Ratio | Seconds | Ratio | Seconds | Ratio | Seconds | Ratio |
| 410.bwaves | **449** | **30.3** | 449 | 30.3 | 450 | 30.2 | **450** | **30.2** | 449 | 30.3 | 452 | 30.1 |
| 416.gamess | 948 | 20.7 | **947** | **20.7** | 946 | 20.7 | 916 | 21.4 | 917 | 21.4 | **916** | **21.4** |
| 433.milc | 467 | 19.7 | 467 | 19.7 | **467** | **19.7** | 468 | 19.6 | **469** | **19.6** | 469 | 19.6 |
| 434.zeusmp | **373** | **24.4** | 372 | 24.4 | 373 | 24.4 | **373** | **24.4** | 372 | 24.4 | 373 | 24.4 |
| 435.gromacs | 387 | 18.5 | **387** | **18.4** | 387 | 18.4 | **383** | **18.7** | 383 | 18.7 | 384 | 18.6 |
| 436.cactusADM | 347 | 34.5 | **346** | **34.5** | 346 | 34.5 | **315** | **37.9** | 315 | 37.9 | 315 | 38.0 |
| 437.leslie3d | **557** | **16.9** | 557 | 16.9 | 559 | 16.8 | **557** | **16.9** | 557 | 16.9 | 559 | 16.8 |
| 444.namd | 526 | 15.2 | 525 | 15.3 | **526** | **15.3** | **531** | **15.1** | 529 | 15.2 | 538 | 14.9 |
| 447.dealII | 406 | 28.2 | **406** | **28.2** | 407 | 28.1 | 370 | 30.9 | 371 | 30.9 | **370** | **30.9** |
| 450.soplex | **540** | **15.4** | 540 | 15.5 | 541 | 15.4 | 503 | 16.6 | **504** | **16.5** | 506 | 16.5 |
| 453.povray | **235** | **22.6** | 237 | 22.5 | 235 | 22.6 | 192 | 27.7 | **192** | **27.7** | 193 | 27.6 |
| 454.calculix | 364 | 22.7 | 364 | 22.7 | **364** | **22.7** | 359 | 23.0 | **360** | **22.9** | 360 | 22.9 |
| 459.GemsFDTD | **623** | **17.0** | 622 | 17.0 | 623 | 17.0 | 623 | 17.0 | **622** | **17.0** | 622 | 17.0 |
| 465.tonto | 519 | 18.9 | **521** | **18.9** | 523 | 18.8 | **473** | **20.8** | 477 | 20.6 | 472 | 20.9 |
| 470.lbm | 910 | 15.1 | **907** | **15.2** | 906 | 15.2 | 910 | 15.1 | **907** | **15.2** | 906 | 15.2 |
| 481.wrf | 526 | 21.2 | 527 | 21.2 | **526** | **21.2** | 527 | 21.2 | **527** | **21.2** | 527 | 21.2 |
| 482.sphinx3 | **943** | **20.7** | 941 | 20.7 | 945 | 20.6 | **899** | **21.7** | 881 | 22.1 | 900 | 21.7 |

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

## General Notes

```
Hardware Sector Prefetch Enable and Adjacent Sector Prefetch Enable
OMP_NUM_THREADS set to number of cores
KMP_AFFINITY set to "physical,0"
KMP_STACKSIZE set to 200M
```

## Base Compiler Invocation

C benchmarks:
icc

C++ benchmarks:
icpc

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## Base Compiler Invocation (Continued)

Fortran benchmarks:
ifort

Benchmarks using both Fortran and C:
icc ifort

## 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 -nofor_main
436.cactusADM: -DSPEC_CPU_LP64 -nofor_main
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 -nofor_main
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:
-xSSE4.1 -ipo -O3 -no-prec-div -static -parallel -opt-prefetch

C++ benchmarks:
-xSSE4.1 -ipo -O3 -no-prec-div -static -parallel -opt-prefetch

Fortran benchmarks:
-xSSE4.1 -ipo -O3 -no-prec-div -static -parallel -opt-prefetch

Benchmarks using both Fortran and C:
-xSSE4.1 -ipo -O3 -no-prec-div -static -parallel -opt-prefetch

## Peak Compiler Invocation

C benchmarks (except as noted below):
icc

Continued on next page

## Peak Compiler Invocation (Continued)

482.sphinx3: icc -m32

C++ benchmarks (except as noted below):
icpc

450.soplex: icpc -m32

Fortran benchmarks:
ifort

Benchmarks using both Fortran and C:
icc ifort

## 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 -nofor_main
436.cactusADM: -DSPEC_CPU_LP64 -nofor_main
437.leslie3d: -DSPEC_CPU_LP64
444.namd: -DSPEC_CPU_LP64
447.dealII: -DSPEC_CPU_LP64
453.povray: -DSPEC_CPU_LP64
454.calculix: -DSPEC_CPU_LP64 -nofor_main
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

## Peak Optimization Flags

C benchmarks:

433.milc: -prof-gen(pass 1) -prof-use(pass 2) -xSSE4.1 -ipo -O3
-no-prec-div -static -fno-alias

470.lbm: basepeak = yes

482.sphinx3: -xSSE4.1 -ipo -O3 -no-prec-div -static -unroll2

C++ benchmarks:

444.namd: -prof-gen(pass 1) -prof-use(pass 2) -xSSE4.1 -ipo -O3
-no-prec-div -static -fno-alias -auto-ilp32

Continued on next page

# Peak Optimization Flags (Continued)

447.dealII: -prof-gen(pass 1) -prof-use(pass 2) -xSSE4.1 -ipo -O3 -no-prec-div -static -unroll2 -ansi-alias -scalar-rep- -opt-prefetch

450.soplex: -prof-gen(pass 1) -prof-use(pass 2) -xSSE4.1 -ipo -O3 -no-prec-div -static -opt-malloc-options=3

453.povray: -prof-gen(pass 1) -prof-use(pass 2) -xSSE4.1 -ipo -O3 -no-prec-div -static -unroll4 -ansi-alias

Fortran benchmarks:

410.bwaves: -xSSE4.1 -ipo -O3 -no-prec-div -static -opt-prefetch -parallel

416.gamess: -prof-gen(pass 1) -prof-use(pass 2) -xSSE4.1 -ipo -O3 -no-prec-div -static -unroll2 -Ob0 -ansi-alias -scalar-rep-

434.zeusmp: basepeak = yes

437.leslie3d: basepeak = yes

459.GemsFDTD: -prof-gen(pass 1) -prof-use(pass 2) -xSSE4.1 -ipo -O3 -no-prec-div -static -unroll2 -Ob0 -opt-prefetch -parallel

465.tonto: -prof-gen(pass 1) -prof-use(pass 2) -xSSE4.1 -ipo -O3 -no-prec-div -static -unroll4 -auto

Benchmarks using both Fortran and C:

435.gromacs: -prof-gen(pass 1) -prof-use(pass 2) -xSSE4.1 -ipo -O3 -no-prec-div -static -opt-prefetch -auto-ilp32

436.cactusADM: -prof-gen(pass 1) -prof-use(pass 2) -xSSE4.1 -ipo -O3 -no-prec-div -static -unroll2 -opt-prefetch -parallel -auto-ilp32

454.calculix: -xSSE4.1 -ipo -O3 -no-prec-div -static -auto-ilp32

481.wrf: -xSSE4.1 -ipo -O3 -no-prec-div -static -opt-prefetch -parallel -auto-ilp32

The flags file that was used to format this result can be browsed at
http://www.spec.org/cpu2006/flags/Intel-ic11.0-fp-linux64-revA.20090827.html

You can also download the XML flags source by saving the following link:
http://www.spec.org/cpu2006/flags/Intel-ic11.0-fp-linux64-revA.20090827.xml

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