# SPEC® CFP2006 Result

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## IBM Corporation

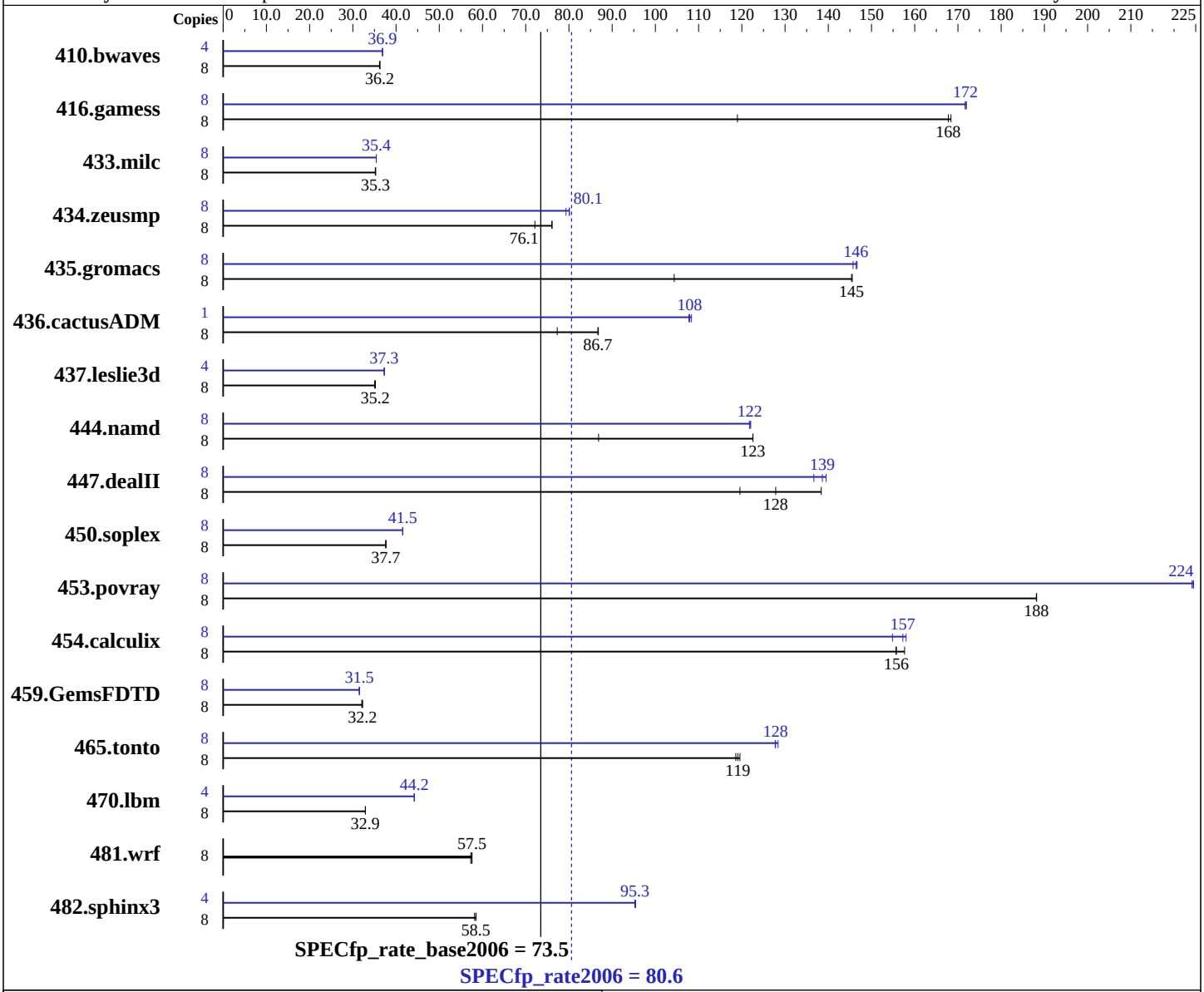
IBM System x iDataPlex dx360 (Intel Xeon E5440)

SPECfp®_rate2006 = 80.6

SPECfp_rate_base2006 = 73.5

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

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




### Hardware

| | |
|---|---|
| CPU Name: | Intel Xeon E5440 |
| CPU Characteristics: | 1333MHz system bus |
| CPU MHz: | 2833 |
| FPU: | Integrated |
| CPU(s) enabled: | 8 cores, 2 chips, 4 cores/chip |
| CPU(s) orderable: | 1,2 chips |
| Primary Cache: | 32 KB I + 32 KB D on chip per core |
| Secondary Cache: | 12 MB I+D on chip per chip, 6 MB shared / 2 cores |

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### Software

| | |
|---|---|
| Operating System: | SuSE Linux Enterprise Server 10(x86_64) SP2, Kernel 2.6.16.60-0.21-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: 16 GB (8 x 2 GB DDR2-5300F ECC)
Disk Subsystem: 1 x 250 GB SATA, 7200 RPM
Other Hardware: None

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

## Results Table

| Benchmark | Base | | | | | | | Peak | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Copies | Seconds | Ratio | Seconds | Ratio | Seconds | Ratio | Copies | Seconds | Ratio | Seconds | Ratio | Seconds | Ratio |
| 410.bwaves | 8 | 3006 | 36.2 | 2996 | 36.3 | **3000** | **36.2** | 4 | 1474 | 36.9 | **1475** | **36.9** | 1475 | 36.9 |
| 416.gamess | 8 | 1316 | 119 | 930 | 168 | **934** | **168** | 8 | 911 | 172 | 912 | 172 | **912** | **172** |
| 433.milc | 8 | 2087 | 35.2 | **2083** | **35.3** | 2082 | 35.3 | 8 | 2073 | 35.4 | **2073** | **35.4** | 2073 | 35.4 |
| 434.zeusmp | 8 | 1009 | 72.1 | **957** | **76.1** | 957 | 76.1 | 8 | **909** | **80.1** | 909 | 80.1 | 918 | 79.3 |
| 435.gromacs | 8 | 547 | 104 | 392 | 146 | **393** | **145** | 8 | **390** | **146** | 389 | 147 | 392 | 146 |
| 436.cactusADM | 8 | 1237 | 77.3 | **1103** | **86.7** | 1101 | 86.8 | 1 | **111** | **108** | 110 | 108 | 111 | 108 |
| 437.leslie3d | 8 | 2145 | 35.1 | **2138** | **35.2** | 2135 | 35.2 | 4 | 1008 | 37.3 | 1009 | 37.3 | **1009** | **37.3** |
| 444.namd | 8 | 739 | 86.9 | **524** | **123** | 523 | 123 | 8 | 527 | 122 | **526** | **122** | 526 | 122 |
| 447.dealII | 8 | 765 | 120 | 661 | 138 | **716** | **128** | 8 | 656 | 140 | **660** | **139** | 670 | 137 |
| 450.soplex | 8 | **1772** | **37.7** | 1774 | 37.6 | 1772 | 37.7 | 8 | 1607 | 41.5 | **1606** | **41.5** | 1605 | 41.6 |
| 453.povray | 8 | 226 | 188 | **226** | **188** | 226 | 188 | 8 | 190 | 225 | **190** | **224** | 190 | 224 |
| 454.calculix | 8 | **424** | **156** | 424 | 156 | 419 | 158 | 8 | 418 | 158 | 426 | 155 | **420** | **157** |
| 459.GemsFDTD | 8 | 2632 | 32.2 | **2634** | **32.2** | 2647 | 32.1 | 8 | **2694** | **31.5** | 2695 | 31.5 | 2692 | 31.5 |
| 465.tonto | 8 | **661** | **119** | 658 | 120 | 664 | 119 | 8 | 613 | 128 | 616 | 128 | **616** | **128** |
| 470.lbm | 8 | 3341 | 32.9 | **3340** | **32.9** | 3340 | 32.9 | 4 | 1243 | 44.2 | 1242 | 44.2 | **1243** | **44.2** |
| 481.wrf | 8 | 1560 | 57.3 | **1553** | **57.5** | 1552 | 57.6 | 8 | 1560 | 57.3 | **1553** | **57.5** | 1552 | 57.6 |
| 482.sphinx3 | 8 | **2667** | **58.5** | 2681 | 58.2 | 2664 | 58.5 | 4 | 818 | 95.3 | **818** | **95.3** | 817 | 95.4 |

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

## Submit Notes

```
The config file option 'submit' was used.
```

## General Notes

```
taskset was used to bind processes to cores except
for 436.cactusADM peak
Hardware Sector Prefetch Enable and Adjacent Sector Prefetch Disable
OMP_NUM_THREADS set to number of processors
KMP_AFFINITY set to "physical,0"
KMP_STACKSIZE set to 64M
```

## Base Compiler Invocation

C benchmarks:
icc

C++ benchmarks:
icpc

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 -opt-prefetch

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

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

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

## Peak Compiler Invocation

C benchmarks (except as noted below):
icc

482.sphinx3: icc -m32

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

450.soplex: icpc -m32

Fortran benchmarks (except as noted below):
ifort

437.leslie3d: ifort -m32

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

Continued on next page

# Peak Optimization Flags (Continued)

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

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

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

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

437.leslie3d: -prof-gen(pass 1) -prof-use(pass 2) -xSSE4.1 -ipo -O3 -no-prec-div -static -opt-malloc-options=3 -opt-prefetch

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

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: basepeak = yes

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.20090710.18.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.20090710.18.xml


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For questions about this result, please contact the tester.
For other inquiries, please contact webmaster@spec.org.

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