# SPEC® CFP2006 Result

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## IBM Corporation

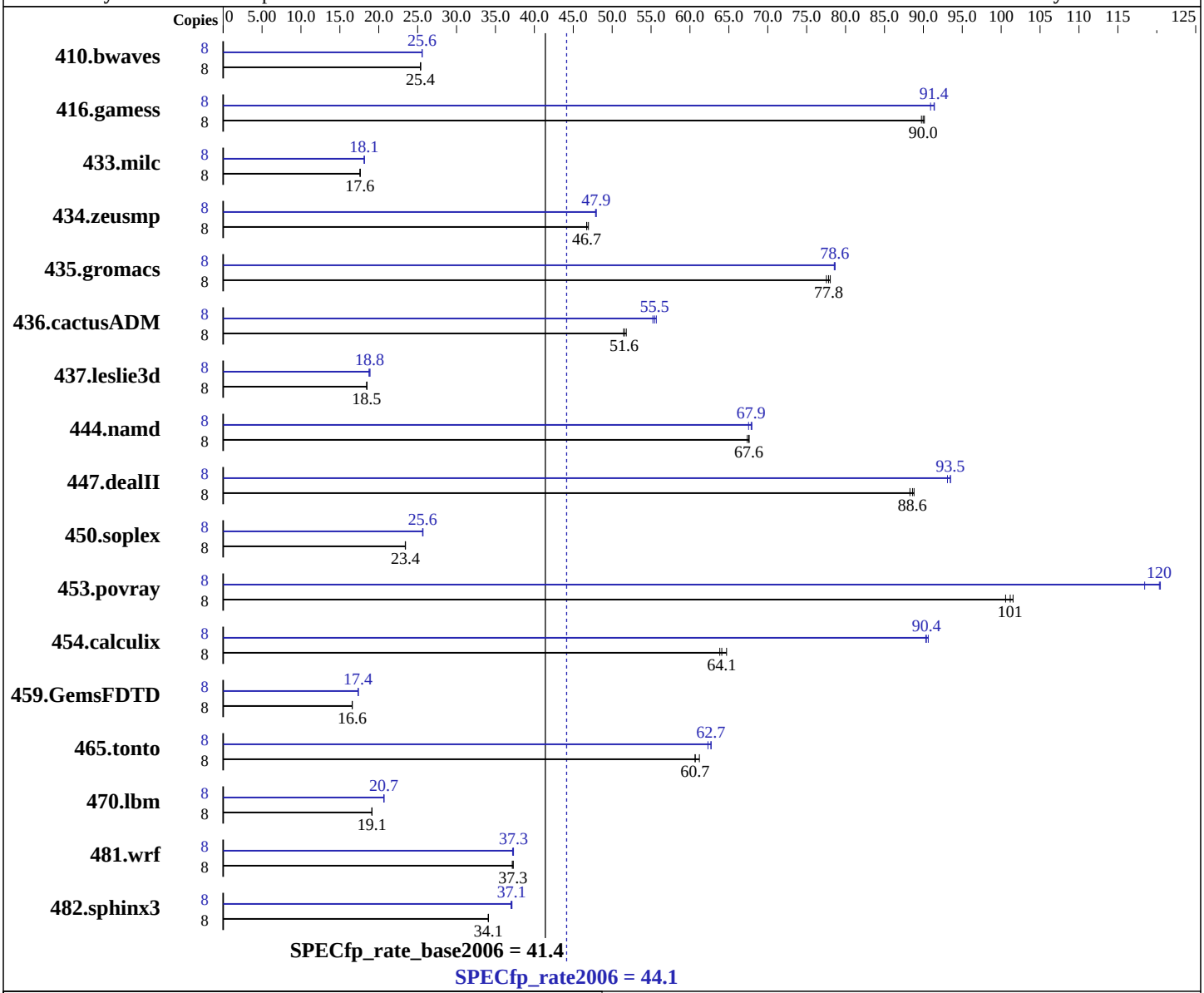
## IBM System x3650 (Intel Xeon E5310)

SPECfp®_rate2006 = 44.1

SPECfp_rate_base2006 = 41.4

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

**Test date:** Sep-2007
**Hardware Availability:** Dec-2006
**Software Availability:** Nov-2007




### Hardware

| | |
|---|---|
| CPU Name: | Intel Xeon E5310 |
| CPU Characteristics: | 1066MHz system bus |
| CPU MHz: | 1600 |
| 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: | 8 MB I+D on chip per chip, 4 MB shared / 2 cores |

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### Software

| | |
|---|---|
| Operating System: | SLES 10 (x86_64), 2.6.16.21-0.8-smp |
| Compiler: | Intel C++ and Fortran Compiler for Linux version 10.1 Build 20070725 |
| Auto Parallel: | No |
| File System: | ReiserFS |
| 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 2 GB DDR2-5300F ECC)
Disk Subsystem: 1 x 36 GB SAS, 15000 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 | 4288 | 25.4 | 4283 | 25.4 | **4284** | **25.4** | 8 | 4252 | 25.6 | 4251 | 25.6 | **4251** | **25.6** |
| 416.gamess | 8 | 1738 | 90.1 | 1745 | 89.8 | **1741** | **90.0** | 8 | 1713 | 91.4 | 1723 | 90.9 | **1714** | **91.4** |
| 433.milc | 8 | **4171** | **17.6** | 4170 | 17.6 | 4172 | 17.6 | 8 | **4048** | **18.1** | 4048 | 18.1 | 4049 | 18.1 |
| 434.zeusmp | 8 | 1558 | 46.7 | **1557** | **46.7** | 1551 | 46.9 | 8 | 1521 | 47.9 | **1519** | **47.9** | 1518 | 48.0 |
| 435.gromacs | 8 | 732 | 78.0 | **734** | **77.8** | 737 | 77.5 | 8 | 727 | 78.5 | 726 | 78.7 | **727** | **78.6** |
| 436.cactusADM | 8 | 1857 | 51.5 | 1845 | 51.8 | **1854** | **51.6** | 8 | 1717 | 55.7 | **1724** | **55.5** | 1731 | 55.2 |
| 437.leslie3d | 8 | **4072** | **18.5** | 4077 | 18.4 | 4065 | 18.5 | 8 | 4013 | 18.7 | **3990** | **18.8** | 3985 | 18.9 |
| 444.namd | 8 | **950** | **67.6** | 949 | 67.6 | 952 | 67.4 | 8 | 944 | 68.0 | **945** | **67.9** | 950 | 67.5 |
| 447.dealII | 8 | **1033** | **88.6** | 1031 | 88.8 | 1037 | 88.3 | 8 | 983 | 93.1 | 979 | 93.5 | **979** | **93.5** |
| 450.soplex | 8 | 2847 | 23.4 | 2850 | 23.4 | **2848** | **23.4** | 8 | 2602 | 25.6 | **2602** | **25.6** | 2597 | 25.7 |
| 453.povray | 8 | 419 | 102 | 423 | 101 | **421** | **101** | 8 | **354** | **120** | 359 | 118 | 353 | 120 |
| 454.calculix | 8 | 1034 | 63.8 | 1020 | 64.7 | **1030** | **64.1** | 8 | 728 | 90.6 | 731 | 90.3 | **730** | **90.4** |
| 459.GemsFDTD | 8 | **5116** | **16.6** | 5118 | 16.6 | 5115 | 16.6 | 8 | 4892 | 17.4 | **4889** | **17.4** | 4888 | 17.4 |
| 465.tonto | 8 | 1298 | 60.7 | 1286 | 61.2 | **1297** | **60.7** | 8 | 1255 | 62.7 | **1256** | **62.7** | 1263 | 62.3 |
| 470.lbm | 8 | **5748** | **19.1** | 5748 | 19.1 | 5747 | 19.1 | 8 | 5320 | 20.7 | 5319 | 20.7 | **5319** | **20.7** |
| 481.wrf | 8 | **2398** | **37.3** | 2405 | 37.2 | 2397 | 37.3 | 8 | 2394 | 37.3 | **2395** | **37.3** | 2402 | 37.2 |
| 482.sphinx3 | 8 | **4573** | **34.1** | 4576 | 34.1 | 4573 | 34.1 | 8 | **4203** | **37.1** | 4200 | 37.1 | 4214 | 37.0 |

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
```

## Base Compiler Invocation

C benchmarks:
`icc`

C++ benchmarks:
`icpc`

Fortran benchmarks:
`ifort`

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## Base Compiler Invocation (Continued)

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:
-fast

C++ benchmarks:
-fast

Fortran benchmarks:
-fast

Benchmarks using both Fortran and C:
-fast

## Peak Compiler Invocation

C benchmarks (except as noted below):
/home/cmplr/usr3/alrahate/compilers/ic10.1mainline/20070725/Linux32/bin/icc
-L/home/cmplr/usr3/alrahate/compilers/ic10.1mainline/20070725/Linux32/lib
-I/home/cmplr/usr3/alrahate/compilers/ic10.1mainline/20070725/Linux32/include

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## Peak Compiler Invocation (Continued)

433.milc: icc

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

450.soplex: /home/cmplr/usr3/alrahate/compilers/ic10.1mainline/20070725/Linux32/bin/icpc
-L/home/cmplr/usr3/alrahate/compilers/ic10.1mainline/20070725/Linux32/lib
-I/home/cmplr/usr3/alrahate/compilers/ic10.1mainline/20070725/Linux32/include

Fortran benchmarks (except as noted below):
ifort

437.leslie3d: /home/cmplr/usr3/alrahate/compilers/ic10.1mainline/20070725/Linux32/bin/ifort
-L/home/cmplr/usr3/alrahate/compilers/ic10.1mainline/20070725/Linux32/lib
-I/home/cmplr/usr3/alrahate/compilers/ic10.1mainline/20070725/Linux32/include

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
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) -fast -fno-alias
-auto-ilp32

470.lbm: -prof-gen(pass 1) -prof-use(pass 2) -fast -unroll2
-scalar-rep- -prefetch -opt-malloc-options=3

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## Peak Optimization Flags (Continued)

482.sphinx3: -fast -unroll2

C++ benchmarks:

444.namd: -prof-gen(pass 1) -prof-use(pass 2) -fast -fno-alias -auto-ilp32

447.dealII: -prof-gen(pass 1) -prof-use(pass 2) -fast -unroll2 -ansi-alias -scalar-rep-

450.soplex: -prof-gen(pass 1) -prof-use(pass 2) -fast -opt-malloc-options=3

453.povray: -prof-gen(pass 1) -prof-use(pass 2) -fast -unroll4 -ansi-alias

Fortran benchmarks:

410.bwaves: -fast -prefetch

416.gamess: -prof-gen(pass 1) -prof-use(pass 2) -fast -unroll2 -Ob0 -ansi-alias -scalar-rep-

434.zeusmp: -prof-gen(pass 1) -prof-use(pass 2) -fast

437.leslie3d: -prof-gen(pass 1) -prof-use(pass 2) -fast -prefetch -opt-malloc-options=3

459.GemsFDTD: -prof-gen(pass 1) -prof-use(pass 2) -fast -unroll2 -Ob0 -prefetch

465.tonto: -prof-gen(pass 1) -prof-use(pass 2) -fast -unroll4 -auto

Benchmarks using both Fortran and C:

435.gromacs: -prof-gen(pass 1) -prof-use(pass 2) -fast -prefetch -auto-ilp32

436.cactusADM: -prof-gen(pass 1) -prof-use(pass 2) -fast -unroll2 -prefetch -auto-ilp32

454.calculix: -fast -unroll-aggressive -auto-ilp32

481.wrf: -fast -auto-ilp32

The flags file that was used to format this result can be browsed at
http://www.spec.org/cpu2006/flags/Intel-ic10.1-FP-intel64-linux-flags.20090714.22.html

You can also download the XML flags source by saving the following link:
http://www.spec.org/cpu2006/flags/Intel-ic10.1-FP-intel64-linux-flags.20090714.22.xml


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