# SPEC® CFP2006 Result



## IBM Corporation

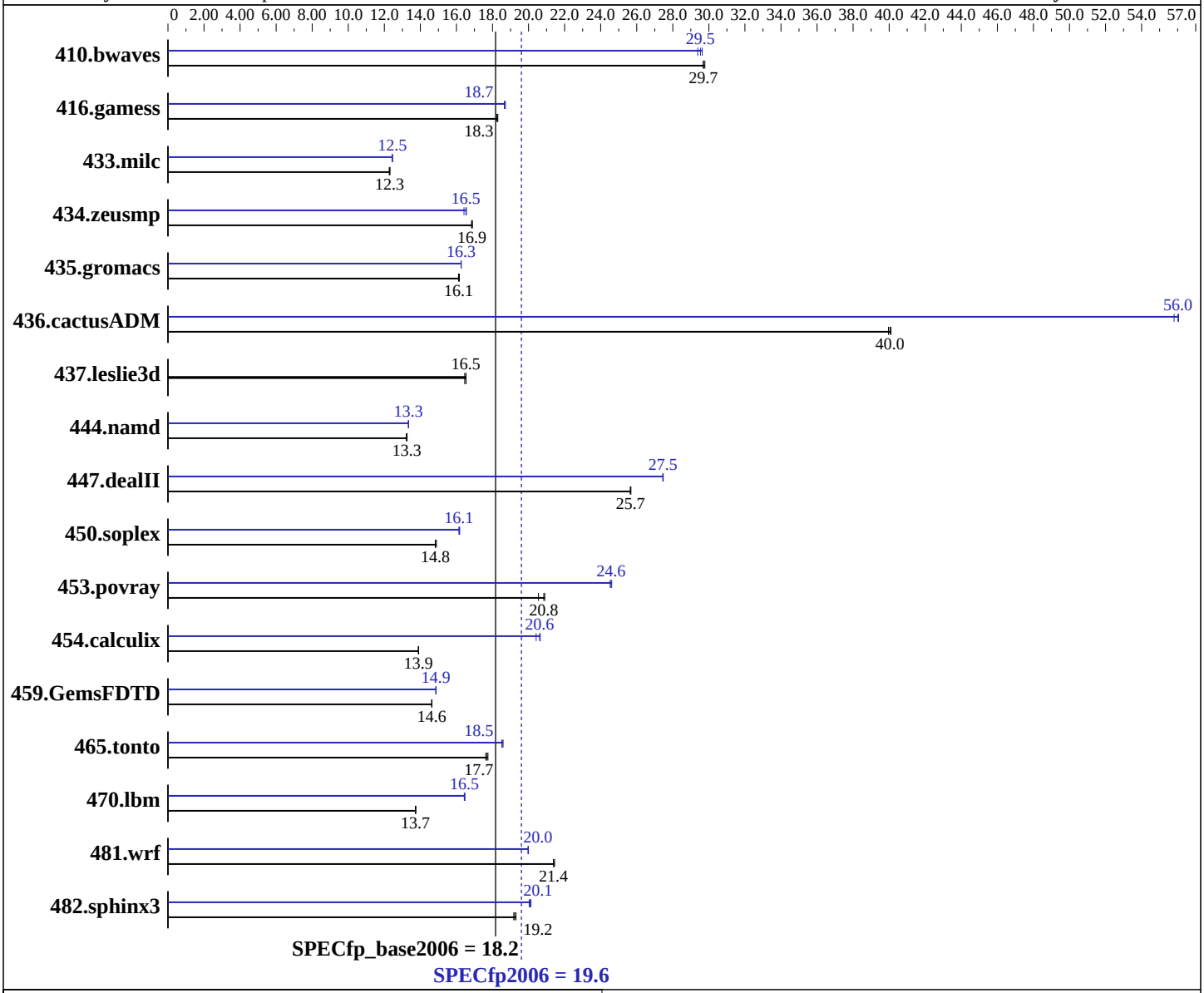
## IBM System x3200 M2 (Intel Xeon X3320)

SPECfp®2006 = 19.6

SPECfp_base2006 = 18.2

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

**Test date:** Jan-2008
**Hardware Availability:** Apr-2008
**Software Availability:** Nov-2007




### Hardware

| | |
|---|---|
| CPU Name: | Intel Xeon X3320 |
| CPU Characteristics: | 1333MHz system bus |
| CPU MHz: | 2500 |
| FPU: | Integrated |
| CPU(s) enabled: | 4 cores, 1 chip, 4 cores/chip |
| CPU(s) orderable: | 1 chip |
| Primary Cache: | 32 KB I + 32 KB D on chip per core |
| Secondary Cache: | 6 MB I+D on chip per chip, 3 MB shared / 2 cores |

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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 10.1 for Linux Build 20070913 Package ID: l_cc_p_10.1.008, l_fc_p_10.1.008 |
| Auto Parallel: | Yes |
| File System: | ReiserFS |
| System State: | Multi-user, run level 3 |
| Base Pointers: | 64-bit |

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L3 Cache: None
Other Cache: None
Memory: 8 GB (4 x 2 GB DDR2-5300 ECC)
Disk Subsystem: 1 x 146 GB SAS, 15000 RPM
Other Hardware: None

Peak Pointers: 32/64-bit
Other Software: Binutils 2.17.50.0.15

## Results Table

| Benchmark | Base | | | | | | Peak | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Seconds | Ratio | Seconds | Ratio | Seconds | Ratio | Seconds | Ratio | Seconds | Ratio | Seconds | Ratio |
| 410.bwaves | 458 | 29.7 | 456 | 29.8 | **458** | **29.7** | 459 | 29.6 | **460** | **29.5** | 463 | 29.4 |
| 416.gamess | 1073 | 18.2 | 1070 | 18.3 | **1072** | **18.3** | 1046 | 18.7 | 1050 | 18.7 | **1049** | **18.7** |
| 433.milc | 746 | 12.3 | **746** | **12.3** | 748 | 12.3 | **737** | **12.5** | 737 | 12.5 | 739 | 12.4 |
| 434.zeusmp | **540** | **16.9** | 541 | 16.8 | 539 | 16.9 | 550 | 16.6 | 554 | 16.4 | **551** | **16.5** |
| 435.gromacs | 442 | 16.2 | **443** | **16.1** | 443 | 16.1 | **439** | **16.3** | 439 | 16.3 | 439 | 16.3 |
| 436.cactusADM | 298 | 40.1 | **298** | **40.0** | 299 | 40.0 | **213** | **56.0** | 214 | 55.8 | 213 | 56.1 |
| 437.leslie3d | **569** | **16.5** | 569 | 16.5 | 571 | 16.5 | **569** | **16.5** | 569 | 16.5 | 571 | 16.5 |
| 444.namd | **605** | **13.3** | 605 | 13.3 | 607 | 13.2 | **601** | **13.3** | 602 | 13.3 | 601 | 13.3 |
| 447.dealII | 446 | 25.6 | 445 | 25.7 | **446** | **25.7** | 416 | 27.5 | **417** | **27.5** | 417 | 27.4 |
| 450.soplex | 560 | 14.9 | 563 | 14.8 | **562** | **14.8** | 515 | 16.2 | 517 | 16.1 | **517** | **16.1** |
| 453.povray | **255** | **20.8** | 259 | 20.5 | 255 | 20.9 | 216 | 24.6 | **216** | **24.6** | 217 | 24.5 |
| 454.calculix | 594 | 13.9 | 594 | 13.9 | **594** | **13.9** | 400 | 20.6 | 404 | 20.4 | **400** | **20.6** |
| 459.GemsFDTD | 725 | 14.6 | 726 | 14.6 | **725** | **14.6** | 713 | 14.9 | 714 | 14.8 | **713** | **14.9** |
| 465.tonto | 554 | 17.7 | **556** | **17.7** | 558 | 17.6 | 529 | 18.6 | 531 | 18.5 | **531** | **18.5** |
| 470.lbm | 999 | 13.8 | **1001** | **13.7** | 1001 | 13.7 | 836 | 16.4 | **835** | **16.5** | 834 | 16.5 |
| 481.wrf | 521 | 21.4 | 522 | 21.4 | **522** | **21.4** | **559** | **20.0** | 559 | 20.0 | 559 | 20.0 |
| 482.sphinx3 | **1014** | **19.2** | 1016 | 19.2 | 1010 | 19.3 | 973 | 20.0 | **970** | **20.1** | 968 | 20.1 |

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

## General Notes

```
All benchmarks compiled in 64-bit mode except 450.soplex,
470.lbm and 482.sphinx3, at peak, are compiled in 32-bit mode
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
```

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## Base Compiler Invocation (Continued)

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:
-fast -parallel

C++ benchmarks:
-fast -parallel

Fortran benchmarks:
-fast -parallel

Benchmarks using both Fortran and C:
-fast -parallel

# Peak Compiler Invocation

C benchmarks (except as noted below):
`/opt/intel/cc/10.1.008/bin/icc -L/opt/intel/cc/10.1.008/lib -I/opt/intel/cc/10.1.008/include`

433.milc: `icc`

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

450.soplex: `/opt/intel/cc/10.1.008/bin/icpc -L/opt/intel/cc/10.1.008/lib -I/opt/intel/cc/10.1.008/include`

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`
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 -parallel

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: basepeak = yes

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

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 -parallel -auto-ilp32

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

481.wrf: -fast -parallel -prefetch -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.20090713.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.20090713.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 Jul 22 18:21:29 2014 by SPEC CPU2006 PS/PDF formatter v6932.
Originally published on 15 April 2008.