# SPEC® CFP2006 Result

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## IBM Corporation

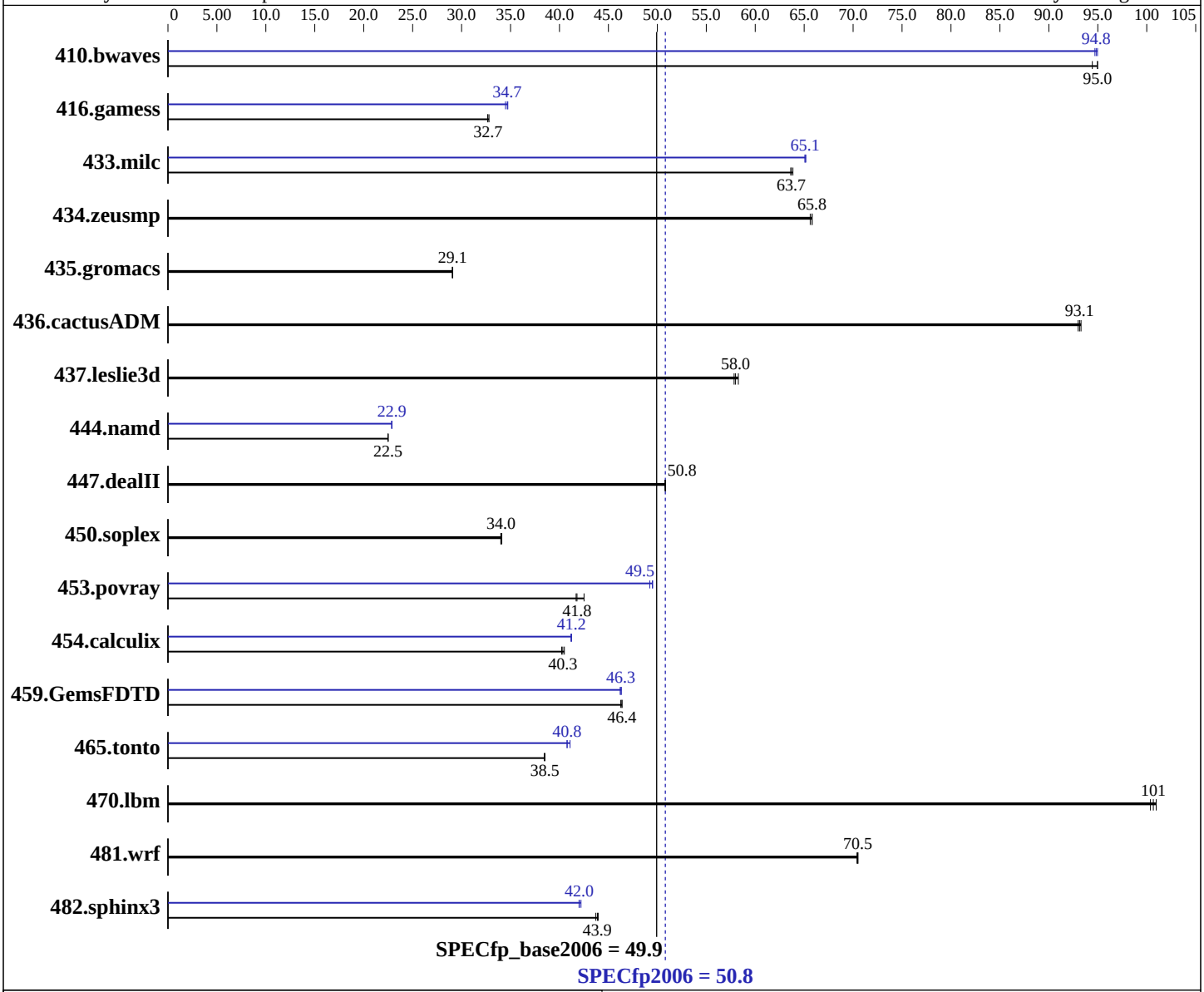
## IBM System x3250 M4 (Intel Core i3-2120)

SPECfp®2006 = 50.8

SPECfp_base2006 = 49.9

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

**Test date:** Nov-2011
**Hardware Availability:** Oct-2011
**Software Availability:** Aug-2011




### Hardware

| | |
|---|---|
| CPU Name: | Intel Core i3-2120 |
| CPU Characteristics: | |
| CPU MHz: | 3300 |
| FPU: | Integrated |
| CPU(s) enabled: | 2 cores, 1 chip, 2 cores/chip, 2 threads/core |
| CPU(s) orderable: | 1 chip |
| Primary Cache: | 32 KB I + 32 KB D on chip per core |
| Secondary Cache: | 256 KB I+D on chip per core |

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### Software

| | |
|---|---|
| Operating System: | Red Hat Enterprise Linux Server Release 6.1, Kernel 2.6.32-131.0.15.el6.x86_64 |
| Compiler: | C/C++/Fortran: Version 12.1.0.225 of Intel Compiler XE Build 20110803 |
| Auto Parallel: | Yes |
| File System: | ext4 |
| System State: | Run level 3 (multi-user) |
| Base Pointers: | 64-bit |

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L3 Cache: 3 MB I+D on chip per chip
Other Cache: None
Memory: 8 GB (2 x 4 GB 2Rx8 PC3-10600E-9, ECC)
Disk Subsystem: 1 x 146 GB SAS, 15000 RPM
Other Hardware: None

Peak Pointers: 32/64-bit
Other Software: None

## Results Table

| Benchmark | Base | | | | | | Peak | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Seconds | Ratio | Seconds | Ratio | Seconds | Ratio | Seconds | Ratio | Seconds | Ratio | Seconds | Ratio |
| 410.bwaves | 144 | 94.4 | 143 | 95.0 | **143** | **95.0** | 143 | 95.0 | 143 | 94.7 | **143** | **94.8** |
| 416.gamess | 597 | 32.8 | 600 | 32.7 | **599** | **32.7** | 564 | 34.7 | 568 | 34.5 | **565** | **34.7** |
| 433.milc | **144** | **63.7** | 144 | 63.9 | 144 | 63.6 | 141 | 65.1 | 141 | 65.2 | **141** | **65.1** |
| 434.zeusmp | **138** | **65.8** | 138 | 65.8 | 139 | 65.6 | **138** | **65.8** | 138 | 65.8 | 139 | 65.6 |
| 435.gromacs | 245 | 29.1 | 246 | 29.0 | **246** | **29.1** | 245 | 29.1 | 246 | 29.0 | **246** | **29.1** |
| 436.cactusADM | 128 | 93.3 | **128** | **93.1** | 129 | 93.0 | 128 | 93.3 | **128** | **93.1** | 129 | 93.0 |
| 437.leslie3d | **162** | **58.0** | 161 | 58.3 | 163 | 57.8 | **162** | **58.0** | 161 | 58.3 | 163 | 57.8 |
| 444.namd | 357 | 22.5 | 357 | 22.5 | **357** | **22.5** | **351** | **22.9** | 351 | 22.9 | 351 | 22.9 |
| 447.dealII | 225 | 50.8 | **225** | **50.8** | 225 | 50.8 | 225 | 50.8 | **225** | **50.8** | 225 | 50.8 |
| 450.soplex | **245** | **34.0** | 245 | 34.0 | 245 | 34.1 | **245** | **34.0** | 245 | 34.0 | 245 | 34.1 |
| 453.povray | 125 | 42.5 | 128 | 41.7 | **127** | **41.8** | 108 | 49.2 | **107** | **49.5** | 107 | 49.5 |
| 454.calculix | 204 | 40.5 | **205** | **40.3** | 205 | 40.2 | 200 | 41.2 | **200** | **41.2** | 200 | 41.2 |
| 459.GemsFDTD | 229 | 46.4 | **229** | **46.4** | 229 | 46.3 | 229 | 46.3 | 230 | 46.2 | **229** | **46.3** |
| 465.tonto | 256 | 38.5 | 256 | 38.4 | **256** | **38.5** | 241 | 40.8 | 240 | 41.1 | **241** | **40.8** |
| 470.lbm | 136 | 101 | **136** | **101** | 137 | 100 | 136 | 101 | **136** | **101** | 137 | 100 |
| 481.wrf | 159 | 70.4 | 158 | 70.5 | **158** | **70.5** | 159 | 70.4 | 158 | 70.5 | **158** | **70.5** |
| 482.sphinx3 | 446 | 43.7 | **444** | **43.9** | 443 | 44.0 | 462 | 42.2 | **464** | **42.0** | 464 | 42.0 |

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

## Platform Notes

```
BIOS Settings:
C-State enabled in BIOS
```

## General Notes

```
Environment variables set by runspec before the start of the run:
KMP_AFFINITY = "granularity=fine,scatter"
LD_LIBRARY_PATH = "/root/SPECcpu12.1/smartheap:/root/SPECcpu12.1/ic12.1-libs/ia32/:/root/SPECcpu12.1/ic12.1-libs/intel64"
OMP_NUM_THREADS = "2"

 Binaries compiled on a system with 1x Core i7-860 CPU + 8GB memory
 using RHEL5.5 with binutils-2.17.50.0.6-14.el5
 Stack size set to unlimited using "ulimit -s unlimited"
 Transparent Huge Pages enabled with:
```

Continued on next page

## General Notes (Continued)

```
echo always > /sys/kernel/mm/redhat_transparent_hugepage/enabled
Filesystem page cache cleared with:
echo 1>       /proc/sys/vm/drop_caches
```

## Base Compiler Invocation

C benchmarks:
```
icc   -m64
```

C++ benchmarks:
```
icpc  -m64
```

Fortran benchmarks:
```
ifort -m64
```

Benchmarks using both Fortran and C:
```
icc   -m64 ifort -m64
```

## 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:
```
-xAVX -ipo -O3 -no-prec-div -static -parallel -opt-prefetch
-ansi-alias
```

C++ benchmarks:
```
-xAVX -ipo -O3 -no-prec-div -static -opt-prefetch -ansi-alias
```

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## Base Optimization Flags (Continued)

Fortran benchmarks:
`-xAVX -ipo -O3 -no-prec-div -static -parallel -opt-prefetch`

Benchmarks using both Fortran and C:
`-xAVX -ipo -O3 -no-prec-div -static -parallel -opt-prefetch -ansi-alias`

## Peak Compiler Invocation

C benchmarks:
`icc -m64`

C++ benchmarks:
`icpc -m64`

Fortran benchmarks:
`ifort -m64`

Benchmarks using both Fortran and C:
`icc -m64 ifort -m64`

## Peak Portability Flags

`Same as Base Portability Flags`

## Peak Optimization Flags

C benchmarks:

433.milc: `-xAVX`(pass 2) `-prof-gen`(pass 1) `-ipo`(pass 2) `-O3`(pass 2) `-no-prec-div`(pass 2) `-prof-use`(pass 2) `-static -auto-ilp32 -ansi-alias`

470.lbm: `basepeak = yes`

482.sphinx3: `-xAVX -ipo -O3 -no-prec-div -unroll2 -ansi-alias -parallel`

C++ benchmarks:

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

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# Peak Optimization Flags (Continued)

447.dealII: basepeak = yes

450.soplex: basepeak = yes

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

Fortran benchmarks:

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

416.gamess: -xAVX(pass 2) -prof-gen(pass 1) -ipo(pass 2) -O3(pass 2) -no-prec-div(pass 2) -prof-use(pass 2) -unroll2 -inline-level=0 -scalar-rep- -static

434.zeusmp: basepeak = yes

437.leslie3d: basepeak = yes

459.GemsFDTD: -xAVX(pass 2) -prof-gen(pass 1) -ipo(pass 2) -O3(pass 2) -no-prec-div(pass 2) -prof-use(pass 2) -unroll2 -inline-level=0 -opt-prefetch -parallel

465.tonto: -xAVX(pass 2) -prof-gen(pass 1) -ipo(pass 2) -O3(pass 2) -no-prec-div(pass 2) -prof-use(pass 2) -inline-calloc -opt-malloc-options=3 -auto -unroll4

Benchmarks using both Fortran and C:

435.gromacs: basepeak = yes

436.cactusADM: basepeak = yes

454.calculix: -xAVX -ipo -O3 -no-prec-div -auto-ilp32 -ansi-alias

481.wrf: basepeak = yes

The flags files that were used to format this result can be browsed at
http://www.spec.org/cpu2006/flags/Intel-ic12.1-linux64.html
http://www.spec.org/cpu2006/flags/IBM-platform-linux64-revB.20111206.html

You can also download the XML flags sources by saving the following links:
http://www.spec.org/cpu2006/flags/Intel-ic12.1-linux64.xml
http://www.spec.org/cpu2006/flags/IBM-platform-linux64-revB.20111206.xml

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