# SPEC® CFP2006 Result

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## IBM Corporation

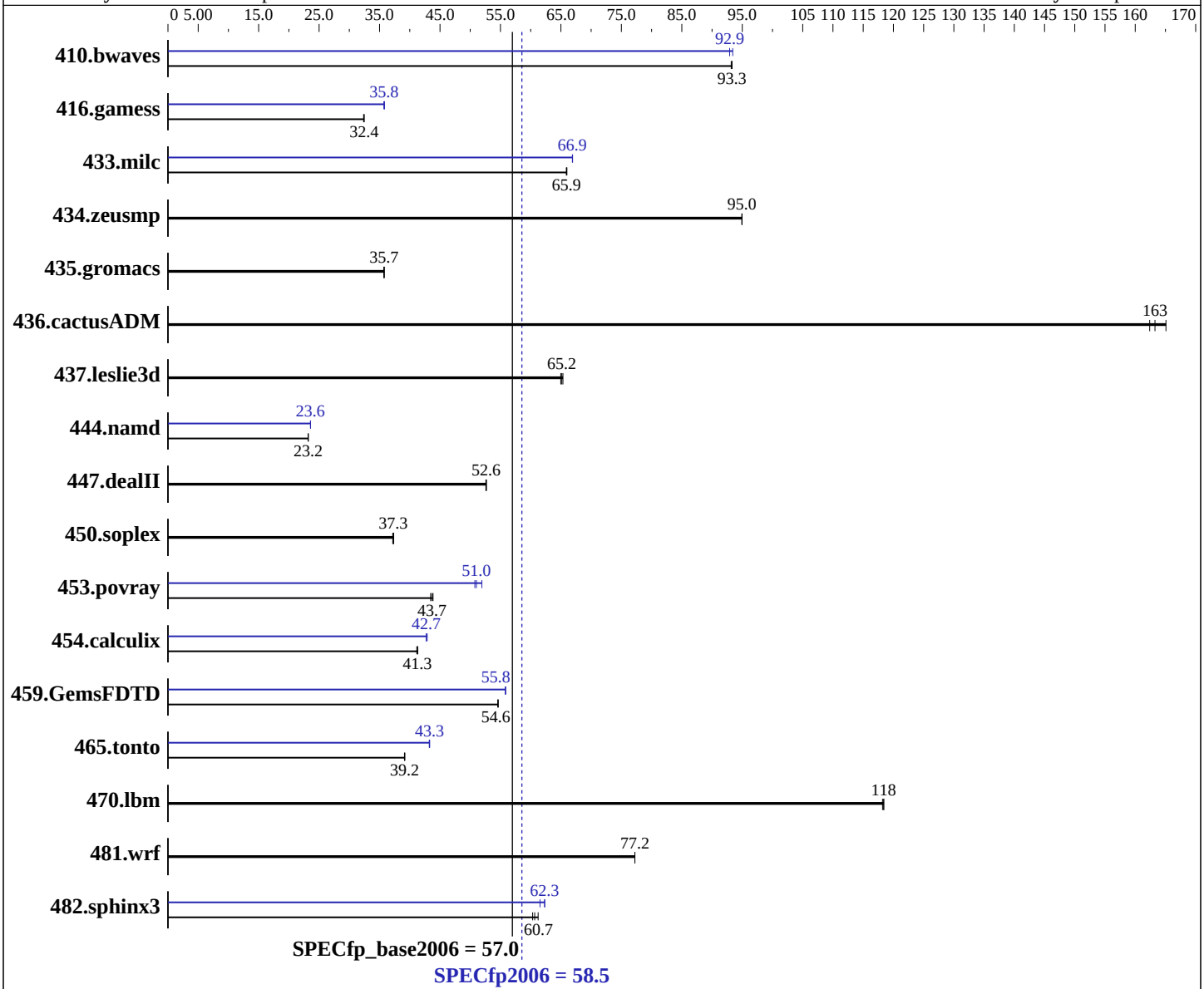
## IBM System x3250 M4 (Intel Xeon E3-1225)

SPECfp®2006 = 58.5

SPECfp_base2006 = 57.0

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

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




### Hardware

| | |
|---|---|
| CPU Name: | Intel Xeon E3-1225 |
| CPU Characteristics: | Intel Turbo Boost Technology up to 3.40 GHz |
| CPU MHz: | 3100 |
| 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: | 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: 6 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 | 146 | 93.3 | 146 | 93.2 | **146** | **93.3** | 146 | 92.9 | 145 | 93.4 | **146** | **92.9** |
| 416.gamess | **604** | **32.4** | 605 | 32.4 | 603 | 32.4 | 548 | 35.7 | 547 | 35.8 | **548** | **35.8** |
| 433.milc | 139 | 66.0 | **139** | **65.9** | 139 | 65.9 | **137** | **66.9** | 137 | 66.9 | 137 | 66.9 |
| 434.zeusmp | 95.8 | 95.0 | 95.8 | 95.0 | **95.8** | **95.0** | 95.8 | 95.0 | 95.8 | 95.0 | **95.8** | **95.0** |
| 435.gromacs | **200** | **35.7** | 200 | 35.8 | 200 | 35.7 | **200** | **35.7** | 200 | 35.8 | 200 | 35.7 |
| 436.cactusADM | **73.2** | **163** | 72.4 | 165 | 73.6 | 162 | **73.2** | **163** | 72.4 | 165 | 73.6 | 162 |
| 437.leslie3d | **144** | **65.2** | 145 | 65.0 | 144 | 65.3 | **144** | **65.2** | 145 | 65.0 | 144 | 65.3 |
| 444.namd | 346 | 23.2 | 346 | 23.2 | **346** | **23.2** | **340** | **23.6** | 340 | 23.6 | 340 | 23.6 |
| 447.dealII | 218 | 52.6 | **217** | **52.6** | 217 | 52.7 | 218 | 52.6 | **217** | **52.6** | 217 | 52.7 |
| 450.soplex | **224** | **37.3** | 223 | 37.3 | 224 | 37.2 | **224** | **37.3** | 223 | 37.3 | 224 | 37.2 |
| 453.povray | **122** | **43.7** | 121 | 43.9 | 122 | 43.4 | **104** | **51.0** | 102 | 51.9 | 105 | 50.8 |
| 454.calculix | 200 | 41.2 | **200** | **41.3** | 200 | 41.3 | 192 | 42.9 | 193 | 42.7 | **193** | **42.7** |
| 459.GemsFDTD | 194 | 54.6 | **194** | **54.6** | 194 | 54.6 | 190 | 55.8 | **190** | **55.8** | 190 | 55.8 |
| 465.tonto | 251 | 39.2 | 252 | 39.1 | **251** | **39.2** | 228 | 43.2 | **227** | **43.3** | 227 | 43.3 |
| 470.lbm | **116** | **118** | 116 | 118 | 116 | 118 | **116** | **118** | 116 | 118 | 116 | 118 |
| 481.wrf | **145** | **77.2** | 145 | 77.2 | 145 | 77.2 | **145** | **77.2** | 145 | 77.2 | 145 | 77.2 |
| 482.sphinx3 | 318 | 61.2 | **321** | **60.7** | 323 | 60.3 | **313** | **62.3** | 317 | 61.5 | 313 | 62.3 |

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

## Platform Notes

```
BIOS Settings:
Turbo Mode enabled in BIOS
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 = "4"

 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"
```

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## General Notes (Continued)

```
Transparent Huge Pages enabled with:
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
```

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## Base Optimization Flags (Continued)

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

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:

Continued on next page

# Peak Optimization Flags (Continued)

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

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.20111220.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.20111220.xml

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