# SPEC® CFP2006 Result

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## IBM Corporation

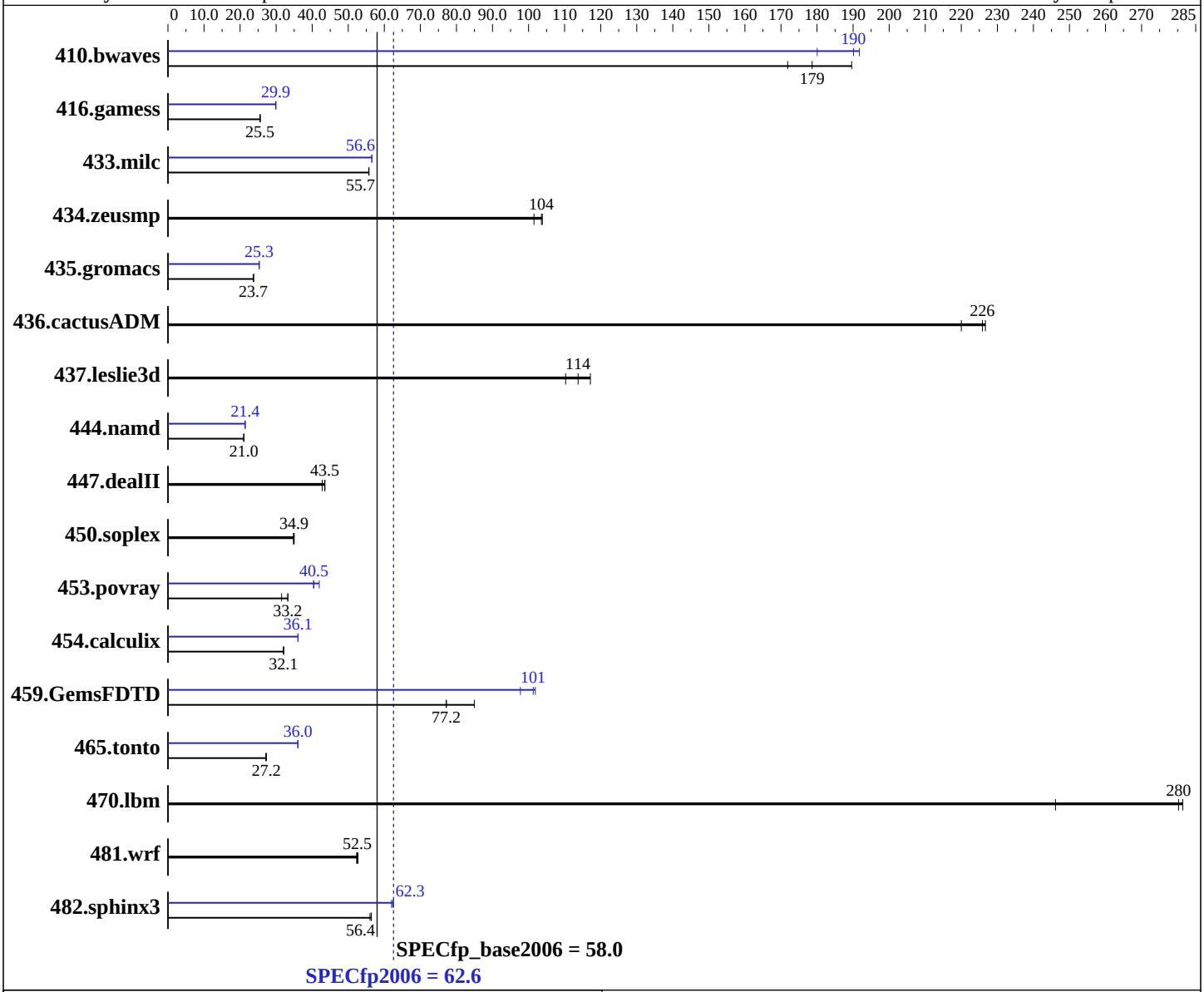
## IBM BladeCenter HS22V (Intel Xeon X5672)

SPECfp®2006 = 62.6

SPECfp_base2006 = 58.0

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

**Test date:** Jun-2011
**Hardware Availability:** Feb-2011
**Software Availability:** Apr-2011




### Hardware

| | |
|---|---|
| CPU Name: | Intel Xeon X5672 |
| CPU Characteristics: | Intel Turbo Boost Technology up to 3.60 GHz |
| CPU MHz: | 3200 |
| FPU: | Integrated |
| CPU(s) enabled: | 8 cores, 2 chips, 4 cores/chip, 2 threads/core |
| CPU(s) orderable: | 1,2 chips |
| 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: | SUSE Linux Enterprise Server 11 SP1 (x86_64), Kernel 2.6.32.12-0.7-default |
| Compiler: | Intel C++ and Fortran Intel 64 Compiler XE for applications running on Intel 64 Version 12.0 Update 3 |
| Auto Parallel: | Yes |
| File System: | ext3 |
| System State: | Run level 3 (multi-user) |
| Base Pointers: | 64-bit |

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L3 Cache: 12 MB I+D on chip per chip
Other Cache: None
Memory: 48 GB (12 x 4 GB 2Rx8 PC3-10600R-9, ECC)
Disk Subsystem: 2 x 50 GB SATA, SSD, RAID 0
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 | 71.7 | 190 | **76.1** | **179** | 79.1 | 172 | 75.5 | 180 | 70.9 | 192 | **71.5** | **190** |
| 416.gamess | 764 | 25.6 | 768 | 25.5 | **767** | **25.5** | 656 | 29.8 | 654 | 30.0 | **655** | **29.9** |
| 433.milc | 165 | 55.7 | 165 | 55.8 | **165** | **55.7** | 162 | 56.5 | **162** | **56.6** | 162 | 56.6 |
| 434.zeusmp | **87.9** | **104** | 87.7 | 104 | 89.7 | 101 | **87.9** | **104** | 87.7 | 104 | 89.7 | 101 |
| 435.gromacs | **301** | **23.7** | 302 | 23.7 | 300 | 23.8 | 282 | 25.3 | 283 | 25.3 | **282** | **25.3** |
| 436.cactusADM | 52.7 | 227 | **52.9** | **226** | 54.3 | 220 | 52.7 | 227 | **52.9** | **226** | 54.3 | 220 |
| 437.leslie3d | 85.2 | 110 | 80.2 | 117 | **82.6** | **114** | 85.2 | 110 | 80.2 | 117 | **82.6** | **114** |
| 444.namd | 381 | 21.0 | **381** | **21.0** | 381 | 21.0 | **375** | **21.4** | 374 | 21.4 | 375 | 21.4 |
| 447.dealII | 263 | 43.5 | **263** | **43.5** | 267 | 42.8 | 263 | 43.5 | **263** | **43.5** | 267 | 42.8 |
| 450.soplex | 238 | 35.0 | 240 | 34.8 | **239** | **34.9** | 238 | 35.0 | 240 | 34.8 | **239** | **34.9** |
| 453.povray | 169 | 31.5 | 160 | 33.3 | **160** | **33.2** | 127 | 41.9 | 132 | 40.3 | **131** | **40.5** |
| 454.calculix | 257 | 32.1 | **257** | **32.1** | 257 | 32.1 | **229** | **36.1** | 229 | 36.1 | 229 | 36.1 |
| 459.GemsFDTD | **137** | **77.2** | 125 | 85.0 | 137 | 77.2 | 109 | 97.7 | **105** | **101** | 104 | 102 |
| 465.tonto | 361 | 27.3 | 362 | 27.2 | **361** | **27.2** | **273** | **36.0** | 273 | 36.1 | 273 | 36.0 |
| 470.lbm | 55.8 | 246 | 48.8 | 281 | **49.0** | **280** | 55.8 | 246 | 48.8 | 281 | **49.0** | **280** |
| 481.wrf | 212 | 52.7 | 213 | 52.3 | **213** | **52.5** | 212 | 52.7 | 213 | 52.3 | **213** | **52.5** |
| 482.sphinx3 | **346** | **56.4** | 348 | 56.0 | 345 | 56.4 | **313** | **62.3** | 312 | 62.6 | 314 | 62.0 |

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

## Operating System Notes

```
'ulimit -s unlimited' was used to set the stacksize to unlimited prior to run
'nodev   /mnt/hugepages   hugetlbfs   defaults   0 0' added to /etc/fstab
echo 900 > /proc/sys/vm/nr_hugepages
export HUGETLB_MORECORE=yes
export LD_PRELOAD=/usr/lib64/libhugetlbfs.so
```

## Platform Notes

```
Load Default BIOS Settings and then change the following
  Turbo Mode enabled
  Turbo Boost set to Traditional
  Power C-states enabled
  Demand Scrub disabled
```

## General Notes

```
Binaries compiled on RHEL5.5
OMP_NUM_THREADS set to number of cores
```

## 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:
```
-xSSE4.2 -ipo -O3 -no-prec-div -static -parallel -opt-prefetch
-ansi-alias
```

C++ benchmarks:
```
-xSSE4.2 -ipo -O3 -no-prec-div -static -opt-prefetch -ansi-alias
```

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## Base Optimization Flags (Continued)

Fortran benchmarks:
`-xSSE4.2 -ipo -O3 -no-prec-div -static -parallel -opt-prefetch`

Benchmarks using both Fortran and C:
`-xSSE4.2 -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: `-xSSE4.2`(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: `-xSSE4.2 -ipo -O3 -no-prec-div -unroll2 -ansi-alias -parallel`

C++ benchmarks:

444.namd: `-xSSE4.2`(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: -xSSE4.2(pass 2) -prof-gen(pass 1) -ipo(pass 2) -O3(pass 2) -no-prec-div(pass 2) -prof-use(pass 2) -unroll4 -ansi-alias -B /usr/share/libhugetlbfs/ -Wl,-melf_x86_64 -Wl,-hugetlbfs-link=BDT

Fortran benchmarks:

410.bwaves: -xSSE4.2 -ipo -O3 -no-prec-div -opt-prefetch -parallel -static

416.gamess: -xSSE4.2(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: -xSSE4.2(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 -B /usr/share/libhugetlbfs/ -Wl,-melf_x86_64 -Wl,-hugetlbfs-link=BDT

465.tonto: -xSSE4.2(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 -B /usr/share/libhugetlbfs/ -Wl,-melf_x86_64 -Wl,-hugetlbfs-link=BDT

Benchmarks using both Fortran and C:

435.gromacs: -xSSE4.2(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

436.cactusADM: basepeak = yes

454.calculix: -xSSE4.2 -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-ic12.0-linux64-revB.html
http://www.spec.org/cpu2006/flags/IBM-platform-linux64-revA.html

You can also download the XML flags sources by saving the following links:
http://www.spec.org/cpu2006/flags/Intel-ic12.0-linux64-revB.xml
http://www.spec.org/cpu2006/flags/IBM-platform-linux64-revA.xml

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Tested with SPEC CPU2006 v1.1.
Report generated on Wed Jul 23 23:45:53 2014 by SPEC CPU2006 PS/PDF formatter v6932.
Originally published on 2 August 2011.