# SPEC® CFP2006 Result

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## Supermicro

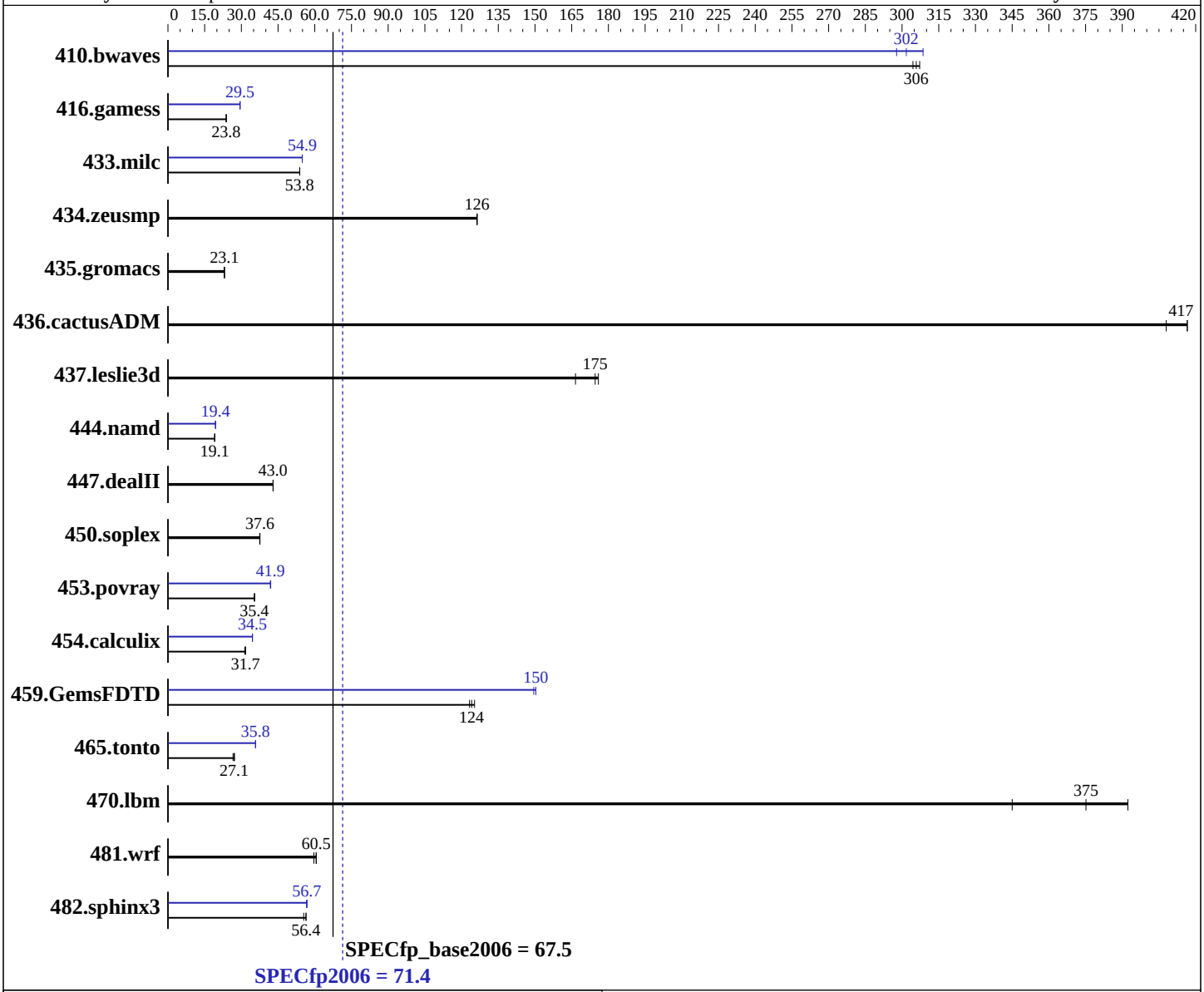
SuperWorkstation 7047A-T (X9DAI, Intel E5-2650)

SPECfp®2006 = 71.4

SPECfp_base2006 = 67.5

**CPU2006 license:** 001176
**Test sponsor:** Supermicro
**Tested by:** Supermicro

**Test date:** Apr-2012
**Hardware Availability:** Mar-2012
**Software Availability:** Dec-2011




## Hardware

| | |
|---|---|
| CPU Name: | Intel Xeon E5-2650 |
| CPU Characteristics: | Intel Turbo Boost Technology up to 2.80 GHz |
| CPU MHz: | 2000 |
| FPU: | Integrated |
| CPU(s) enabled: | 16 cores, 2 chips, 8 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: | Red Hat Enterprise Linux Server Release 6.2 (Santiago), Kernel 2.6.32-220.el6.x86_64 |
| Compiler: | C/C++: Version 12.1.0.225 of Intel C++ Studio XE for Linux; Fortran: Version 12.1.0.225 of Intel Fortran Studio XE for Linux |
| Auto Parallel: | Yes |
| File System: | ext4 |

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L3 Cache: 20 MB I+D on chip per chip
Other Cache: None
Memory: 128 GB (16 x 8 GB 2Rx4 PC3-12800R-11, ECC)
Disk Subsystem: 1 x 1 TB SATA II, 7200 RPM
Other Hardware: None

System State: Run level 3 (multi-user)
Base Pointers: 64-bit
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 | 44.6 | 304 | 44.2 | 307 | **44.4** | **306** | 44.0 | 309 | 45.6 | 298 | **45.0** | **302** |
| 416.gamess | **822** | **23.8** | 822 | 23.8 | 823 | 23.8 | **664** | **29.5** | 664 | 29.5 | 666 | 29.4 |
| 433.milc | 170 | 53.9 | 171 | 53.8 | **170** | **53.8** | **167** | **54.9** | 167 | 54.9 | 167 | 54.9 |
| 434.zeusmp | 72.0 | 126 | **72.0** | **126** | 72.0 | 126 | 72.0 | 126 | **72.0** | **126** | 72.0 | 126 |
| 435.gromacs | 310 | 23.0 | 309 | 23.1 | **309** | **23.1** | 310 | 23.0 | 309 | 23.1 | **309** | **23.1** |
| 436.cactusADM | **28.7** | **417** | 29.3 | 408 | 28.7 | 417 | **28.7** | **417** | 29.3 | 408 | 28.7 | 417 |
| 437.leslie3d | 56.4 | 167 | **53.8** | **175** | 53.4 | 176 | 56.4 | 167 | **53.8** | **175** | 53.4 | 176 |
| 444.namd | 420 | 19.1 | 420 | 19.1 | **420** | **19.1** | 413 | 19.4 | 413 | 19.4 | **413** | **19.4** |
| 447.dealII | 266 | 43.0 | **266** | **43.0** | 266 | 42.9 | 266 | 43.0 | **266** | **43.0** | 266 | 42.9 |
| 450.soplex | **222** | **37.6** | 222 | 37.5 | 222 | 37.6 | **222** | **37.6** | 222 | 37.5 | 222 | 37.6 |
| 453.povray | 150 | 35.4 | 151 | 35.3 | **150** | **35.4** | **127** | **41.9** | 127 | 42.0 | 127 | 41.9 |
| 454.calculix | 262 | 31.4 | **260** | **31.7** | 260 | 31.7 | 239 | 34.5 | 239 | 34.6 | **239** | **34.5** |
| 459.GemsFDTD | 84.7 | 125 | 86.1 | 123 | **85.5** | **124** | 70.6 | 150 | **70.6** | **150** | 71.0 | 149 |
| 465.tonto | **363** | **27.1** | 370 | 26.6 | 362 | 27.2 | 275 | 35.8 | **275** | **35.8** | 275 | 35.8 |
| 470.lbm | **36.6** | **375** | 39.8 | 345 | 35.0 | 392 | **36.6** | **375** | 39.8 | 345 | 35.0 | 392 |
| 481.wrf | 187 | 59.6 | **184** | **60.5** | 184 | 60.6 | 187 | 59.6 | **184** | **60.5** | 184 | 60.6 |
| 482.sphinx3 | **346** | **56.4** | 345 | 56.4 | 351 | 55.5 | **344** | **56.7** | 343 | 56.8 | 344 | 56.7 |

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

## Operating System Notes

```
Stack size set to unlimited using "ulimit -s unlimited"
```

## Platform Notes

```
The system used an ATI Radeon HD 4870 X2 graphics card
```

## General Notes

```
Environment variables set by runspec before the start of the run:
KMP_AFFINITY = "granularity=fine,scatter"
LD_LIBRARY_PATH = "/home/cpu2006/libs/32:/home/cpu2006/libs/64"
OMP_NUM_THREADS = "16"
```

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## General Notes (Continued)

```
Binaries compiled on a system with 1x Core i7-860 CPU + 8GB
memory using RHEL5.5
Transparent Huge Pages enabled with:
echo always > /sys/kernel/mm/redhat_transparent_hugepage/enabled
```

## 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 file that was used to format this result can be browsed at
http://www.spec.org/cpu2006/flags/Intel-ic12.1-official-linux64.20111122.html

You can also download the XML flags source by saving the following link:
http://www.spec.org/cpu2006/flags/Intel-ic12.1-official-linux64.20111122.xml

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For other inquiries, please contact webmaster@spec.org.

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