# SPEC® CFP2006 Result
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## Supermicro

SuperServer 1017C-TF (X9SCL-F, Intel Xeon E3-1230)

$SPECfp^{®}2006 =$ 53.6

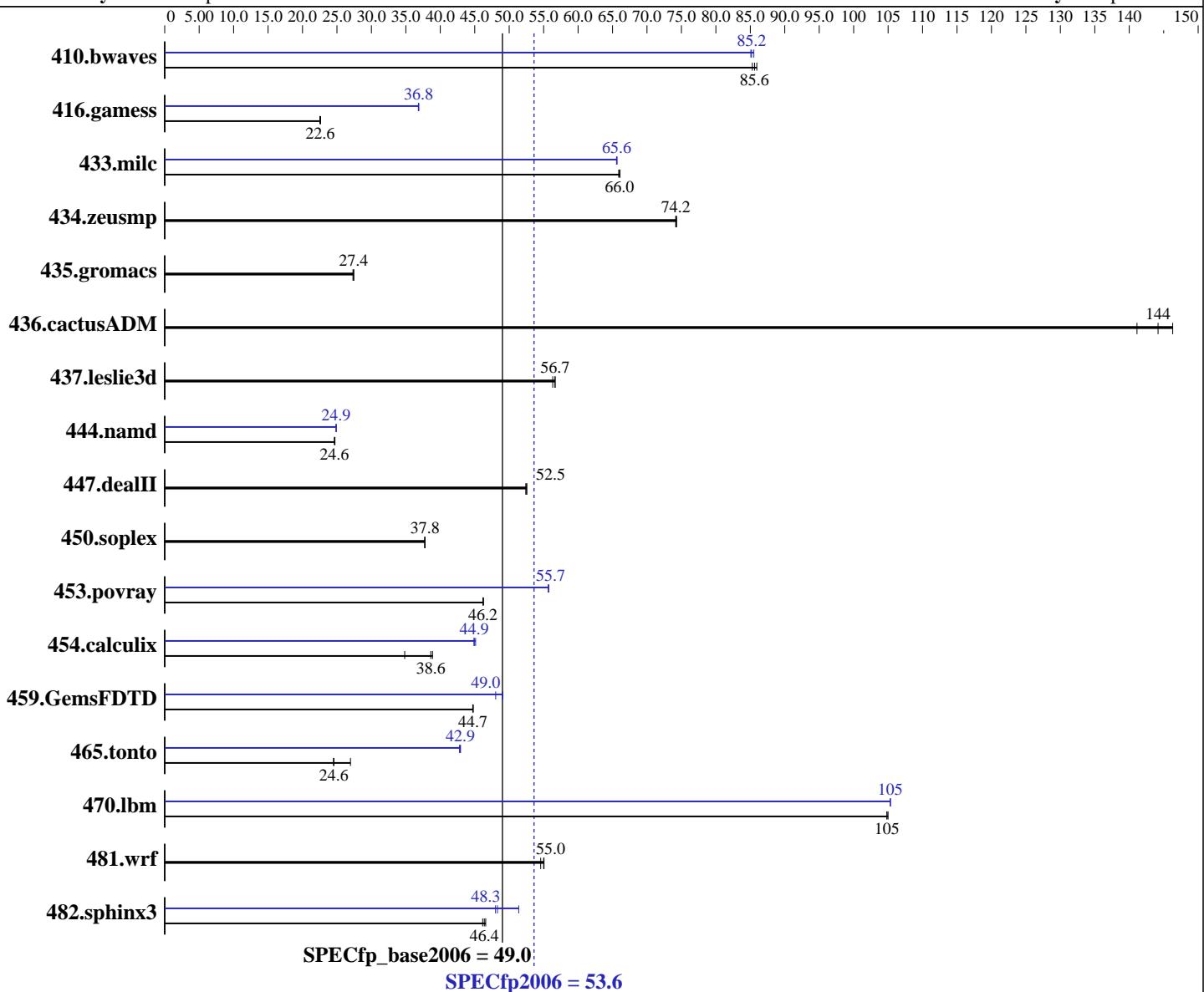$SPECfp\_base2006 =$ 49.0

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

**Test date:** May-2011
**Hardware Availability:** Apr-2011
**Software Availability:** Apr-2011



410.bwaves 85.2 / 85.6
416.gamess 36.8 / 22.6
433.milc 65.6 / 66.0
434.zeusmp 74.2
435.gromacs 27.4
436.cactusADM 144
437.leslie3d 56.7
444.namd 24.9 / 24.6
447.dealII 52.5
450.soplex 37.8
453.povray 55.7 / 46.2
454.calculix 44.9 / 38.6
459.GemsFDTD 49.0 / 44.7
465.tonto 42.9 / 24.6
470.lbm 105 / 105
481.wrf 55.0
482.sphinx3 48.3 / 46.4

**SPECfp_base2006 = 49.0**
**SPECfp2006 = 53.6**

## Hardware

| | |
|---|---|
| CPU Name: | Intel Xeon E3-1230 |
| CPU Characteristics: | Intel Turbo Boost Technology up to 3.60 GHz |
| CPU MHz: | 3200 |
| FPU: | Integrated |
| CPU(s) enabled: | 4 cores, 1 chip, 4 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 |

*Continued on next page*

## Software

| | |
|---|---|
| Operating System: | SUSE Linux Enterprise Server 11 (x86_64) SP1 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 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 |

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| | | | |
|---|---|---|---|
| L3 Cache: | 8 MB I+D on chip per chip | System State: | Run level 3 (multi-user) |
| Other Cache: | None | Base Pointers: | 64-bit |
| Memory: | 16 GB (4 x 4 GB 2Rx8 PC3-10600E-9, ECC) | Peak Pointers: | 32/64-bit |
| Disk Subsystem: | 1 x 500 GB SATA II, 7200 RPM | Other Software: | None |
| Other Hardware: | None | | |

## Results Table

| Benchmark | Base | | | | | | Peak | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Seconds | Ratio | Seconds | Ratio | Seconds | Ratio | Seconds | Ratio | Seconds | Ratio | Seconds | Ratio |
| 410.bwaves | 158 | 85.9 | **159** | **85.6** | 159 | 85.3 | 159 | 85.5 | 160 | 85.1 | **160** | **85.2** |
| 416.gamess | **867** | **22.6** | 865 | 22.6 | 870 | 22.5 | 531 | 36.9 | 532 | 36.8 | **532** | **36.8** |
| 433.milc | 139 | 66.1 | 139 | 65.9 | **139** | **66.0** | 140 | 65.7 | **140** | **65.6** | 140 | 65.6 |
| 434.zeusmp | **123** | **74.2** | 123 | 74.2 | 122 | 74.3 | **123** | **74.2** | 123 | 74.2 | 122 | 74.3 |
| 435.gromacs | **260** | **27.4** | 260 | 27.4 | 261 | 27.3 | **260** | **27.4** | 260 | 27.4 | 261 | 27.3 |
| 436.cactusADM | **82.9** | **144** | 81.7 | 146 | 84.7 | 141 | **82.9** | **144** | 81.7 | 146 | 84.7 | 141 |
| 437.leslie3d | 167 | 56.3 | 166 | 56.7 | **166** | **56.7** | 167 | 56.3 | 166 | 56.7 | **166** | **56.7** |
| 444.namd | 326 | 24.6 | **325** | **24.6** | 325 | 24.7 | 322 | 24.9 | 322 | 24.9 | **322** | **24.9** |
| 447.dealII | 218 | 52.6 | **218** | **52.5** | 218 | 52.4 | 218 | 52.6 | **218** | **52.5** | 218 | 52.4 |
| 450.soplex | 221 | 37.7 | 221 | 37.8 | **221** | **37.8** | 221 | 37.7 | 221 | 37.8 | **221** | **37.8** |
| 453.povray | 115 | 46.2 | **115** | **46.2** | 115 | 46.3 | **95.5** | **55.7** | 95.5 | 55.7 | 95.5 | 55.7 |
| 454.calculix | **214** | **38.6** | 237 | 34.8 | 212 | 38.9 | 184 | 44.9 | **184** | **44.9** | 183 | 45.1 |
| 459.GemsFDTD | 237 | 44.8 | **237** | **44.7** | 237 | 44.7 | 216 | 49.1 | **216** | **49.0** | 221 | 48.0 |
| 465.tonto | 365 | 27.0 | 402 | 24.5 | **401** | **24.6** | **229** | **42.9** | 230 | 42.8 | 229 | 42.9 |
| 470.lbm | 131 | 105 | 131 | 105 | **131** | **105** | 130 | 105 | 130 | 105 | **130** | **105** |
| 481.wrf | **203** | **55.0** | 205 | 54.6 | 203 | 55.1 | **203** | **55.0** | 205 | 54.6 | 203 | 55.1 |
| 482.sphinx3 | **420** | **46.4** | 422 | 46.2 | 418 | 46.6 | 379 | 51.4 | **404** | **48.3** | 406 | 48.0 |

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 stack size to unlimited prior to run
Hugepages was enabled with the following:
nodev   /mnt/hugepages   hugetlbfs  defaults   0 0' added to /etc/fstab
echo 900 > /proc/sys/vm/nr_hugepages
export HUGETLB_MORECORE=yes
```

## Platform Notes

```
Fan speed set to Full Speed in BIOS Setup.
```

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## General Notes

```
OMP_NUM_THREADS set to number of cores
Binaries compiled on RHEL5.5 with binutils-2.17.50.0.6-14.el5
```

## 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: -xAVX(pass 2) -prof-gen(pass 1) -ipo(pass 2) -O3(pass 2)
            -no-prec-div(pass 2) -prof-use(pass 2) -parallel
            -ansi-alias -static -auto-ilp32

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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| | | | |
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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
-B /usr/share/libhugetlbfs/ -Wl,-melf_x86_64 -Wl,-hugetlbfs-link=BDT

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
-B /usr/share/libhugetlbfs/ -Wl,-melf_x86_64 -Wl,-hugetlbfs-link=BDT

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
-B /usr/share/libhugetlbfs/ -Wl,-melf_x86_64 -Wl,-hugetlbfs-link=BDT

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
-B /usr/share/libhugetlbfs/ -Wl,-melf_x86_64 -Wl,-hugetlbfs-link=BDT

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/Intel-Linux64-Platform.20110308.html

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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/Intel-Linux64-Platform.20110308.xml

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