# SPEC® CFP2006 Result

## Supermicro

Supermicro Processor Blade SBI-7428R-T3
(B10DRi, Intel Xeon E5-2690 v3)

$SPECfp®\_rate2006 = 805$

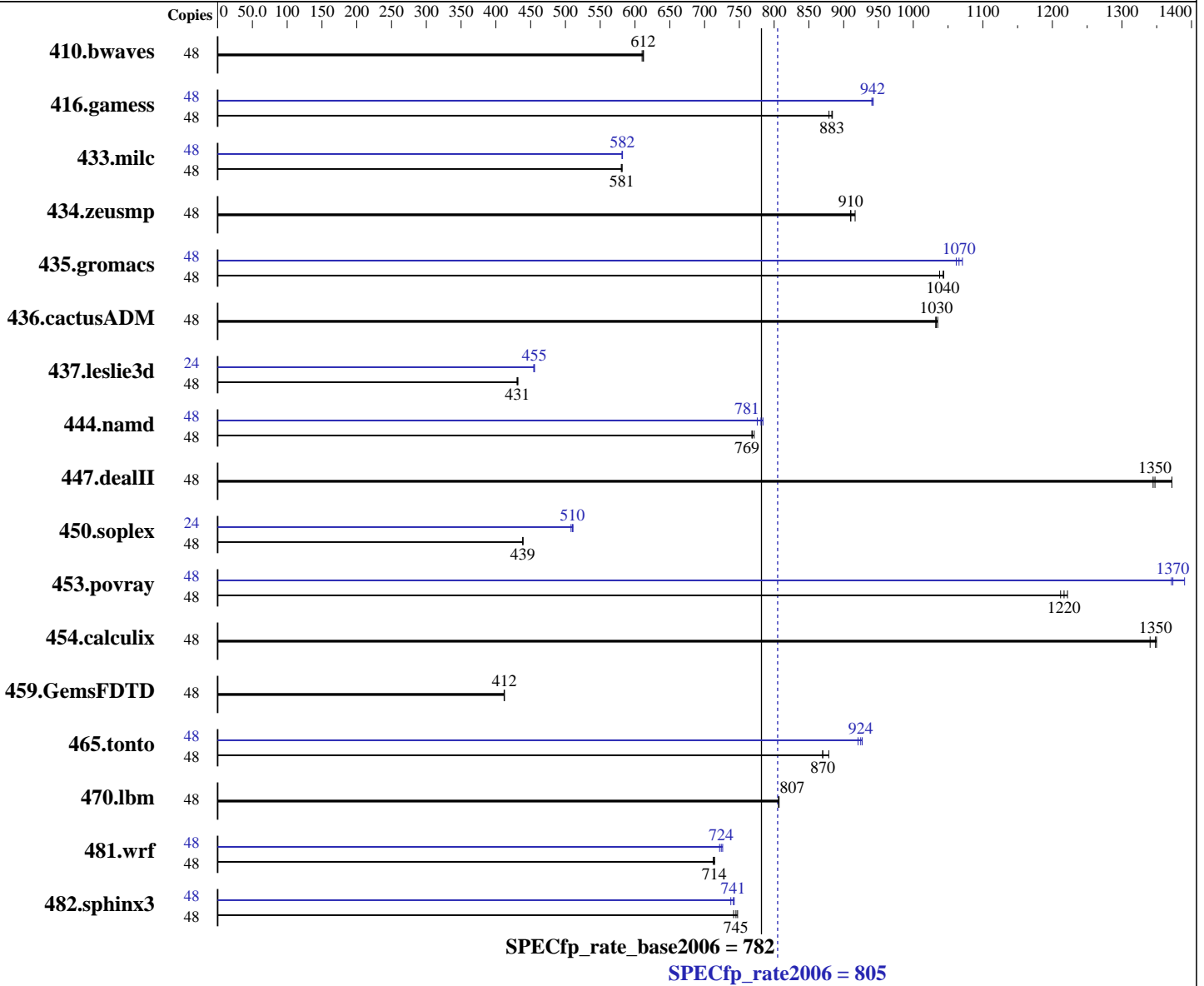$SPECfp\_rate\_base2006 = 782$

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

**Test date:** Nov-2014  
**Hardware Availability:** Sep-2014  
**Software Availability:** Sep-2014

| Benchmark | Copies | Result |
|---|---|---|
| 410.bwaves | 48 | 612 |
| 416.gamess | 48 | 942 |
| 416.gamess | 48 | 883 |
| 433.milc | 48 | 582 |
| 433.milc | 48 | 581 |
| 434.zeusmp | 48 | 910 |
| 435.gromacs | 48 | 1070 |
| 435.gromacs | 48 | 1040 |
| 436.cactusADM | 48 | 1030 |
| 437.leslie3d | 24 | 455 |
| 437.leslie3d | 48 | 431 |
| 444.namd | 48 | 781 |
| 444.namd | 48 | 769 |
| 447.dealII | 48 | 1350 |
| 450.soplex | 24 | 510 |
| 450.soplex | 48 | 439 |
| 453.povray | 48 | 1370 |
| 453.povray | 48 | 1220 |
| 454.calculix | 48 | 1350 |
| 459.GemsFDTD | 48 | 412 |
| 465.tonto | 48 | 924 |
| 465.tonto | 48 | 870 |
| 470.lbm | 48 | 807 |
| 481.wrf | 48 | 724 |
| 481.wrf | 48 | 714 |
| 482.sphinx3 | 48 | 741 |
| 482.sphinx3 | 48 | 745 |

SPECfp_rate_base2006 = 782

SPECfp_rate2006 = 805

## Hardware

CPU Name: Intel Xeon E5-2690 v3  
CPU Characteristics: Intel Turbo Boost Technology up to 3.50 GHz  
CPU MHz: 2600  
FPU: Integrated  
CPU(s) enabled: 24 cores, 2 chips, 12 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  
**Continued on next page**

## Software

Operating System: Red Hat Enterprise Linux Server release 7.0, Kernel 3.10.0-123.el7.x86_64  
Compiler: C/C++: Version 15.0.0.090 of Intel C++ Studio XE for Linux; Fortran: Version 15.0.0.090 of Intel Fortran Studio XE for Linux  
Auto Parallel: No  
File System: ext4  
System State: Run level 3 (multi-user)  
**Continued on next page**

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| | | | |
|---|---|---|---|
| L3 Cache: | 30 MB I+D on chip per chip | Base Pointers: | 32/64-bit |
| Other Cache: | None | Peak Pointers: | 32/64-bit |
| Memory: | 256 GB (16 x 16 GB 2Rx4 PC4-2133P-R) | Other Software: | None |
| Disk Subsystem: | 1 x 400 GB SATA III SSD | | |
| Other Hardware: | None | | |

## Results Table

| Benchmark | Base | | | | | | Peak | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Copies | Seconds | Ratio | Seconds | Ratio | Seconds | Ratio | Copies | Seconds | Ratio | Seconds | Ratio | Seconds | Ratio |
| 410.bwaves | 48 | 1069 | 610 | **1067** | **612** | 1065 | 612 | 48 | 1069 | 610 | **1067** | **612** | 1065 | 612 |
| 416.gamess | 48 | **1064** | **883** | 1069 | 879 | 1063 | 884 | 48 | 997 | 942 | **998** | **942** | 999 | 940 |
| 433.milc | 48 | 759 | 580 | 758 | 581 | **758** | **581** | 48 | 757 | 582 | 758 | 581 | **757** | **582** |
| 434.zeusmp | 48 | 480 | 910 | 477 | 916 | **480** | **910** | 48 | 480 | 910 | 477 | 916 | **480** | **910** |
| 435.gromacs | 48 | 330 | 1040 | **329** | **1040** | 328 | 1040 | 48 | 323 | 1060 | 320 | 1070 | **322** | **1070** |
| 436.cactusADM | 48 | **555** | **1030** | 554 | 1040 | 556 | 1030 | 48 | **555** | **1030** | 554 | 1040 | 556 | 1030 |
| 437.leslie3d | 48 | **1047** | **431** | 1045 | 432 | 1048 | 430 | 24 | **495** | **455** | 496 | 454 | 495 | 455 |
| 444.namd | 48 | **501** | **769** | 499 | 771 | 501 | 768 | 48 | 491 | 784 | 496 | 776 | **493** | **781** |
| 447.dealII | 48 | **408** | **1350** | 400 | 1370 | 408 | 1340 | 48 | **408** | **1350** | 400 | 1370 | 408 | 1340 |
| 450.soplex | 48 | 912 | 439 | 913 | 439 | **912** | **439** | 24 | **392** | **510** | 392 | 511 | 394 | 508 |
| 453.povray | 48 | 211 | 1210 | 209 | 1220 | **210** | **1220** | 48 | **186** | **1370** | 186 | 1370 | 184 | 1390 |
| 454.calculix | 48 | 293 | 1350 | 295 | 1340 | **294** | **1350** | 48 | 293 | 1350 | 295 | 1340 | **294** | **1350** |
| 459.GemsFDTD | 48 | 1235 | 412 | 1237 | 412 | **1236** | **412** | 48 | 1235 | 412 | 1237 | 412 | **1236** | **412** |
| 465.tonto | 48 | 543 | 870 | 538 | 879 | **543** | **870** | 48 | 510 | 927 | **511** | **924** | 513 | 921 |
| 470.lbm | 48 | 818 | 806 | **817** | **807** | 817 | 807 | 48 | 818 | 806 | **817** | **807** | 817 | 807 |
| 481.wrf | 48 | 750 | 714 | **751** | **714** | 753 | 712 | 48 | 739 | 726 | **741** | **724** | 743 | 722 |
| 482.sphinx3 | 48 | 1261 | 742 | **1255** | **745** | 1252 | 747 | 48 | 1268 | 738 | 1260 | 743 | **1262** | **741** |

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

## Submit Notes

    The numactl mechanism was used to bind copies to processors. The config file option 'submit'
    was used to generate numactl commands to bind each copy to a specific processor.
    For details, please see the config file.

## Operating System Notes

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

## Platform Notes

    BIOS Settings:
    COD Enable = Enabled
    Early Snoop = Disabled

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## Supermicro

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(B10DRi, Intel Xeon E5-2690 v3)

$SPECfp\_rate2006 =$    805

$SPECfp\_rate\_base2006 =$    782

| | |
|---|---|
| **CPU2006 license:** 001176 | **Test date:** Nov-2014 |
| **Test sponsor:** Supermicro | **Hardware Availability:** Sep-2014 |
| **Tested by:** Supermicro | **Software Availability:** Sep-2014 |

## General Notes

```
Environment variables set by runspec before the start of the run:
LD_LIBRARY_PATH = "/home/spec/libs/32:/home/spec/libs/64:/home/spec/sh"

 Binaries compiled on a system with 1x Core i5-4670K CPU + 16GB
 memory using RedHat EL 7.0
 Transparent Huge Pages enabled with:
 echo always > /sys/kernel/mm/transparent_hugepage/enabled
 Filesystem page cache cleared with:
 echo 1>        /proc/sys/vm/drop_caches
 runspec command invoked through numactl i.e.:
 numactl --interleave=all runspec <etc>
```

## 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
```

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## Base Optimization Flags

C benchmarks:
```
-xCORE-AVX2 -ipo -O3 -no-prec-div -opt-prefetch -auto-p32
-ansi-alias -opt-mem-layout-trans=3
```

C++ benchmarks:
```
-xCORE-AVX2 -ipo -O3 -no-prec-div -opt-prefetch -auto-p32
-ansi-alias -opt-mem-layout-trans=3
```

Fortran benchmarks:
```
-xCORE-AVX2 -ipo -O3 -no-prec-div -opt-prefetch
```

Benchmarks using both Fortran and C:
```
-xCORE-AVX2 -ipo -O3 -no-prec-div -opt-prefetch -auto-p32
-ansi-alias -opt-mem-layout-trans=3
```

## Peak Compiler Invocation

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

C++ benchmarks (except as noted below):
```
icpc   -m64
```
```
   450.soplex: icpc -m32 -L/opt/intel/composer_xe_2015/lib/ia32
```

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

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

## Peak 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
    453.povray: -DSPEC_CPU_LP64
   454.calculix: -DSPEC_CPU_LP64 -nofor_main
  459.GemsFDTD: -DSPEC_CPU_LP64
```

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# Peak Portability Flags (Continued)

```
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
```

# Peak Optimization Flags

C benchmarks:

```
433.milc: -xCORE-AVX2(pass 2) -prof-gen(pass 1) -ipo(pass 2)
          -O3(pass 2) -no-prec-div(pass 2)
          -opt-mem-layout-trans=3(pass 2) -prof-use(pass 2)
          -auto-ilp32

470.lbm: basepeak = yes

482.sphinx3: -xCORE-AVX2 -ipo -O3 -no-prec-div -opt-mem-layout-trans=3
             -unroll2
```

C++ benchmarks:

```
444.namd: -xCORE-AVX2(pass 2) -prof-gen(pass 1) -ipo(pass 2)
          -O3(pass 2) -no-prec-div(pass 2)
          -opt-mem-layout-trans=3(pass 2) -prof-use(pass 2) -fno-alias
          -auto-ilp32

447.dealII: basepeak = yes

450.soplex: -xCORE-AVX2(pass 2) -prof-gen(pass 1) -ipo(pass 2)
            -O3(pass 2) -no-prec-div(pass 2)
            -opt-mem-layout-trans=3(pass 2) -prof-use(pass 2)
            -opt-malloc-options=3

453.povray: -xCORE-AVX2(pass 2) -prof-gen(pass 1) -ipo(pass 2)
            -O3(pass 2) -no-prec-div(pass 2)
            -opt-mem-layout-trans=3(pass 2) -prof-use(pass 2) -unroll4
            -ansi-alias
```

Fortran benchmarks:

```
410.bwaves: basepeak = yes

416.gamess: -xCORE-AVX2(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-

434.zeusmp: basepeak = yes
```

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| | | | |
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# Peak Optimization Flags (Continued)

437.leslie3d: `-xCORE-AVX2 -ipo -O3 -no-prec-div -opt-prefetch`

459.GemsFDTD: `basepeak = yes`

465.tonto: `-xCORE-AVX2(pass 2) -prof-gen(pass 1) -ipo(pass 2)`
`-O3(pass 2) -no-prec-div(pass 2) -prof-use(pass 2) -unroll4`
`-auto -inline-calloc -opt-malloc-options=3`

Benchmarks using both Fortran and C:

435.gromacs: `-xCORE-AVX2(pass 2) -prof-gen(pass 1) -ipo(pass 2)`
`-O3(pass 2) -no-prec-div(pass 2)`
`-opt-mem-layout-trans=3(pass 2) -prof-use(pass 2)`
`-opt-prefetch -auto-ilp32`

436.cactusADM: `basepeak = yes`

454.calculix: `basepeak = yes`

481.wrf: `-xCORE-AVX2 -ipo -O3 -no-prec-div -auto-ilp32`

The flags files that were used to format this result can be browsed at
http://www.spec.org/cpu2006/flags/Intel-ic15.0-official-linux64.html
http://www.spec.org/cpu2006/flags/Supermicro-Platform-Settings-V1.2-revE.html

You can also download the XML flags sources by saving the following links:
http://www.spec.org/cpu2006/flags/Intel-ic15.0-official-linux64.xml
http://www.spec.org/cpu2006/flags/Supermicro-Platform-Settings-V1.2-revE.xml

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