



# SPEC<sup>®</sup> CFP2006 Result

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## Supermicro

SuperServer1028GR-TR  
(X10DRG-H , Intel Xeon E5-2690 v3)

SPECfp<sup>®</sup>\_rate2006 = 789

SPECfp\_rate\_base2006 = 767

CPU2006 license: 001176

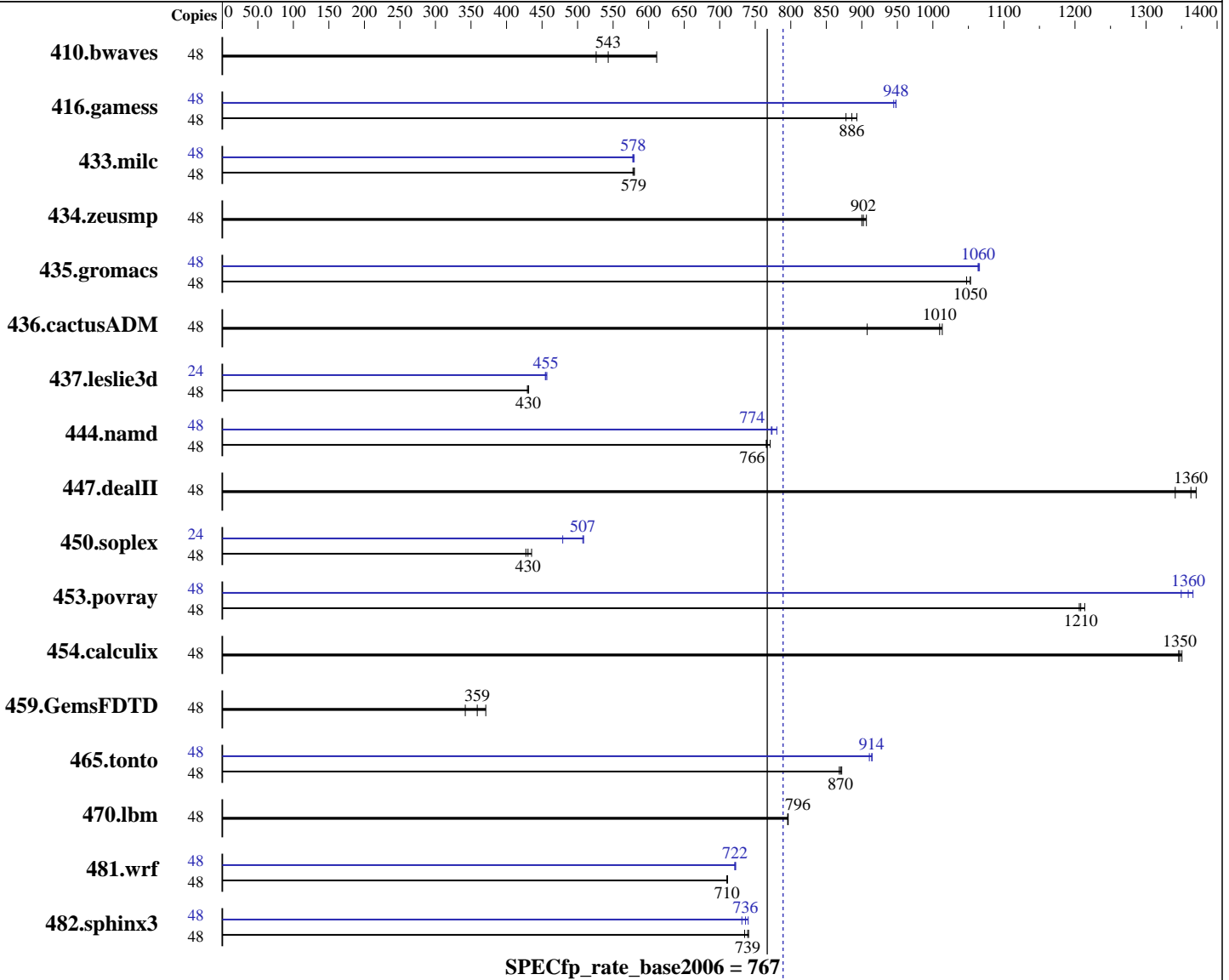
Test sponsor: Supermicro

Tested by: Supermicro

Test date: Oct-2014

Hardware Availability: Sep-2014

Software Availability: Oct-2014



### 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

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### 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)

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L3 Cache: 30 MB I+D on chip per chip  
Other Cache: None  
Memory: 128 GB (8 x 16 GB 2Rx4 PC4-2133P-R)  
Disk Subsystem: 1 x 400 GB SATA III, SSD  
Other Hardware: None

Base Pointers: 32/64-bit  
Peak Pointers: 32/64-bit  
Other Software: None

## Results Table

| Benchmark     | Base   |            |            |             |             |             |             | Peak   |            |             |             |             |             |             |
|---------------|--------|------------|------------|-------------|-------------|-------------|-------------|--------|------------|-------------|-------------|-------------|-------------|-------------|
|               | Copies | Seconds    | Ratio      | Seconds     | Ratio       | Seconds     | Ratio       | Copies | Seconds    | Ratio       | Seconds     | Ratio       | Seconds     | Ratio       |
| 410.bwaves    | 48     | 1067       | 611        | 1240        | 526         | <u>1201</u> | <u>543</u>  | 48     | 1067       | 611         | 1240        | 526         | <u>1201</u> | <u>543</u>  |
| 416.gamess    | 48     | 1052       | 893        | 1071        | 878         | <u>1061</u> | <u>886</u>  | 48     | 991        | 948         | 995         | 945         | <u>991</u>  | <u>948</u>  |
| 433.milc      | 48     | <u>761</u> | <u>579</u> | 762         | 578         | 760         | 580         | 48     | 760        | 580         | 763         | 578         | <u>762</u>  | <u>578</u>  |
| 434.zeusmp    | 48     | 482        | 906        | <u>484</u>  | <u>902</u>  | 485         | 900         | 48     | 482        | 906         | <u>484</u>  | <u>902</u>  | 485         | 900         |
| 435.gromacs   | 48     | 327        | 1050       | 326         | 1050        | <u>326</u>  | <u>1050</u> | 48     | <u>322</u> | <u>1060</u> | 322         | 1070        | 322         | 1060        |
| 436.cactusADM | 48     | 566        | 1010       | <u>568</u>  | <u>1010</u> | 632         | 908         | 48     | 566        | 1010        | <u>568</u>  | <u>1010</u> | 632         | 908         |
| 437.leslie3d  | 48     | 1051       | 429        | <u>1048</u> | <u>430</u>  | 1047        | 431         | 24     | 494        | 457         | 496         | 455         | <u>495</u>  | <u>455</u>  |
| 444.namd      | 48     | 499        | 771        | <u>502</u>  | <u>766</u>  | 503         | 765         | 48     | 498        | 773         | <u>498</u>  | <u>774</u>  | 493         | 780         |
| 447.dealII    | 48     | 401        | 1370       | 409         | 1340        | <u>403</u>  | <u>1360</u> | 48     | 401        | 1370        | 409         | 1340        | <u>403</u>  | <u>1360</u> |
| 450.soplex    | 48     | 920        | 435        | <u>931</u>  | <u>430</u>  | 937         | 427         | 24     | 418        | 479         | 394         | 509         | <u>395</u>  | <u>507</u>  |
| 453.povray    | 48     | 210        | 1210       | 212         | 1210        | <u>211</u>  | <u>1210</u> | 48     | 189        | 1350        | <u>188</u>  | <u>1360</u> | 187         | 1370        |
| 454.calculix  | 48     | 293        | 1350       | 294         | 1350        | <u>294</u>  | <u>1350</u> | 48     | 293        | 1350        | 294         | 1350        | <u>294</u>  | <u>1350</u> |
| 459.GemsFDTD  | 48     | 1489       | 342        | <u>1419</u> | <u>359</u>  | 1373        | 371         | 48     | 1489       | 342         | <u>1419</u> | <u>359</u>  | 1373        | 371         |
| 465.tonto     | 48     | 544        | 868        | 542         | 872         | <u>543</u>  | <u>870</u>  | 48     | <u>517</u> | <u>914</u>  | 519         | 911         | 516         | 915         |
| 470.lbm       | 48     | 828        | 796        | <u>828</u>  | <u>796</u>  | 829         | 796         | 48     | 828        | 796         | <u>828</u>  | <u>796</u>  | 829         | 796         |
| 481.wrf       | 48     | 755        | 710        | 754         | 711         | <u>755</u>  | <u>710</u>  | 48     | 743        | 721         | 742         | 723         | <u>743</u>  | <u>722</u>  |
| 482.sphinx3   | 48     | 1263       | 741        | <u>1265</u> | <u>739</u>  | 1273        | 735         | 48     | 1264       | 740         | 1279        | 731         | <u>1270</u> | <u>736</u>  |

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:  
Execute Disable Bit = Disable  
Intel Virtualization Technology = Disable

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Test date: Oct-2014  
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Software Availability: Oct-2014

## Platform Notes (Continued)

COD Enable = Enable  
Early Snoop = Disable

## General Notes

Environment variables set by runspec before the start of the run:

```
LD_LIBRARY_PATH = "/home/cpu2006/libs/32:/home/cpu2006/libs/64:/home/cpu2006/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
```

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## Base 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

## 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

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## Peak Portability Flags (Continued)

```
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
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
```

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## Peak Optimization Flags (Continued)

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

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-revG.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-revG.xml>



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For questions about this result, please contact the tester.  
For other inquiries, please contact [webmaster@spec.org](mailto:webmaster@spec.org).

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