



# SPEC<sup>®</sup> CFP2006 Result

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## Supermicro

Supermicro C7H170-M motherboard  
(C7H170-M, Intel Core i7-6700)

SPECfp<sup>®</sup>\_rate2006 = 190

SPECfp\_rate\_base2006 = 185

CPU2006 license: 001176

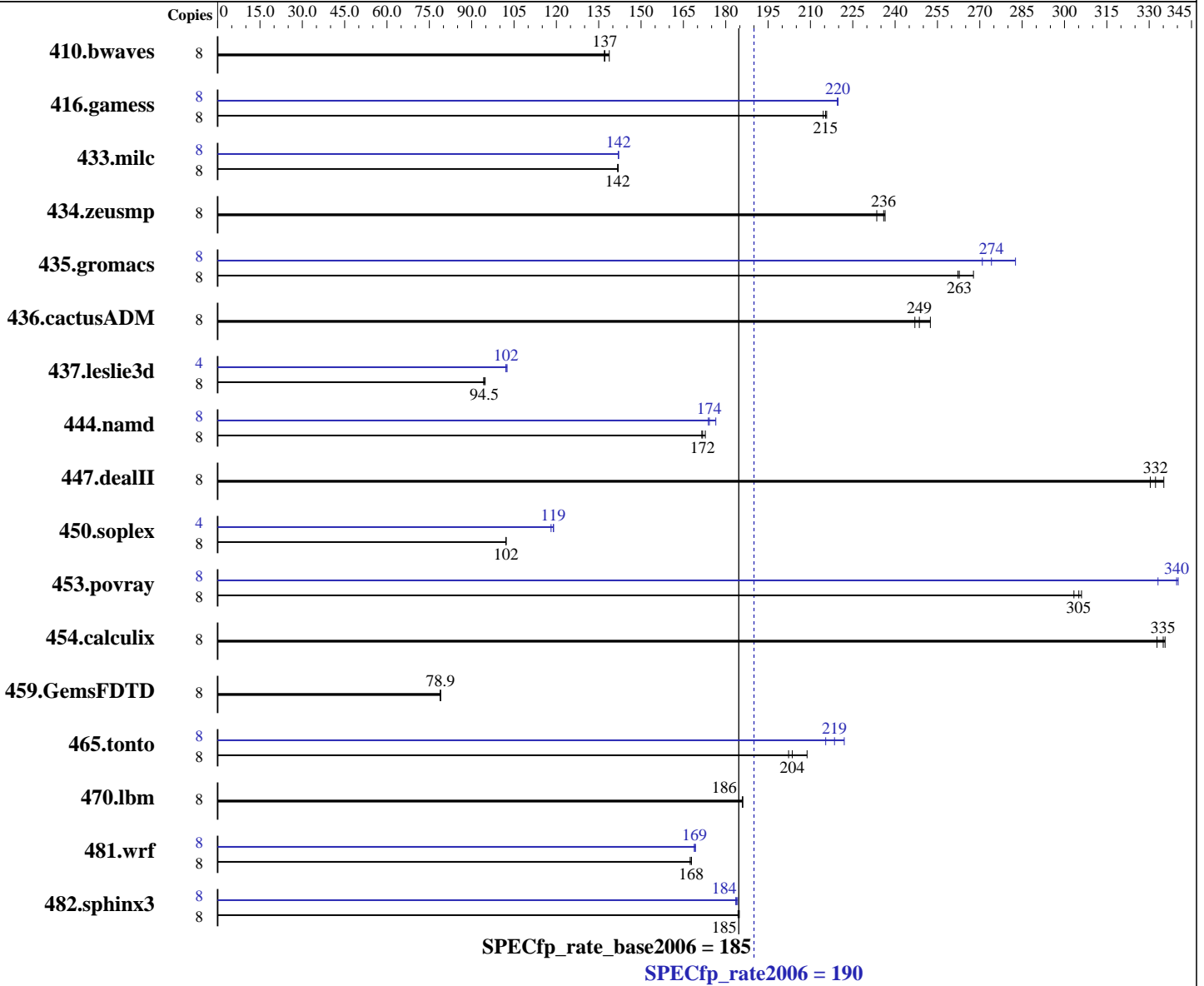
Test sponsor: Supermicro

Tested by: Supermicro

Test date: Oct-2015

Hardware Availability: Sep-2015

Software Availability: Sep-2014



### Hardware

CPU Name: Intel Core i7-6700  
 CPU Characteristics: Intel Turbo Boost Technology up to 4.00 GHz  
 CPU MHz: 3400  
 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

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### Software

Operating System: Red Hat Enterprise Linux Server release 7.1, Kernel 3.10.0-229.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: xfs  
 System State: Run level 3 (multi-user)

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L3 Cache: 8 MB I+D on chip per chip  
Other Cache: None  
Memory: 16 GB (4 x 4 GB 1Rx8 PC4-2800R-U, running at 2133 MHz)  
Disk Subsystem: 1 x 200 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	8	784	139	794	137	<b>792</b>	<b>137</b>	8	784	139	794	137	<b>792</b>	<b>137</b>		
416.gamess	8	726	216	730	215	<b>727</b>	<b>215</b>	8	713	220	713	220	<b>713</b>	<b>220</b>		
433.milc	8	517	142	<b>518</b>	<b>142</b>	518	142	8	517	142	517	142	<b>517</b>	<b>142</b>		
434.zeusmp	8	<b>309</b>	<b>236</b>	308	236	312	234	8	<b>309</b>	<b>236</b>	308	236	312	234		
435.gromacs	8	213	268	218	262	<b>217</b>	<b>263</b>	8	202	283	<b>208</b>	<b>274</b>	211	271		
436.cactusADM	8	379	252	<b>385</b>	<b>249</b>	387	247	8	379	252	<b>385</b>	<b>249</b>	387	247		
437.leslie3d	8	<b>796</b>	<b>94.5</b>	798	94.2	793	94.8	4	367	103	368	102	<b>368</b>	<b>102</b>		
444.namd	8	371	173	374	172	<b>373</b>	<b>172</b>	8	364	176	369	174	<b>368</b>	<b>174</b>		
447.dealII	8	273	335	277	330	<b>275</b>	<b>332</b>	8	273	335	277	330	<b>275</b>	<b>332</b>		
450.soplex	8	653	102	653	102	<b>653</b>	<b>102</b>	4	282	118	280	119	<b>280</b>	<b>119</b>		
453.povray	8	<b>140</b>	<b>305</b>	140	303	139	306	8	125	340	128	333	<b>125</b>	<b>340</b>		
454.calculix	8	197	336	198	333	<b>197</b>	<b>335</b>	8	197	336	198	333	<b>197</b>	<b>335</b>		
459.GemsFDTD	8	1076	78.9	<b>1076</b>	<b>78.9</b>	1074	79.0	8	1076	78.9	<b>1076</b>	<b>78.9</b>	1074	79.0		
465.tonto	8	389	202	377	209	<b>387</b>	<b>204</b>	8	<b>360</b>	<b>219</b>	365	215	355	222		
470.lbm	8	<b>591</b>	<b>186</b>	591	186	591	186	8	<b>591</b>	<b>186</b>	591	186	591	186		
481.wrf	8	<b>533</b>	<b>168</b>	534	167	532	168	8	528	169	529	169	<b>529</b>	<b>169</b>		
482.sphinx3	8	846	184	<b>844</b>	<b>185</b>	844	185	8	849	184	847	184	<b>849</b>	<b>184</b>		

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

## Submit Notes

The taskset mechanism was used to bind copies to processors. The config file option 'submit' was used to generate taskset 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"



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SPECfp\_rate\_base2006 = 185

CPU2006 license: 001176

Test sponsor: Supermicro

Tested by: Supermicro

Test date: Oct-2015

Hardware Availability: Sep-2015

Software Availability: Sep-2014

### Platform Notes

As tested, the system used a Supermicro CSE-743TQ-865B-SQ chassis.

The chassis is configured with a PWS-865-PQ power supply, 1 SNK-P0046A4 heatsink, as well as 1 FAN-0103L4 rear fan and 2 FAN-0104L4 chassis fan.

Sysinfo program /usr/cpu2006/config/sysinfo.rev6914

\$Rev: 6914 \$ \$Date:: 2014-06-25 #\$ e3fbb8667b5a285932ceab81e28219e1

running on C7H170-01 Tue Oct 20 11:02:29 2015

This section contains SUT (System Under Test) info as seen by some common utilities. To remove or add to this section, see:

<http://www.spec.org/cpu2006/Docs/config.html#sysinfo>

From /proc/cpuinfo

model name : Intel(R) Core(TM) i7-6700 CPU @ 3.40GHz

1 "physical id"s (chips)

8 "processors"

cores, siblings (Caution: counting these is hw and system dependent. The following excerpts from /proc/cpuinfo might not be reliable. Use with caution.)

cpu cores : 4

siblings : 8

physical 0: cores 0 1 2 3

cache size : 8192 KB

From /proc/meminfo

MemTotal: 16334164 kB

HugePages\_Total: 0

Hugepagesize: 2048 kB

From /etc/\*release\* /etc/\*version\*

os-release:

NAME="Red Hat Enterprise Linux Server"

VERSION="7.1 (Maipo)"

ID="rhel"

ID\_LIKE="fedora"

VERSION\_ID="7.1"

PRETTY\_NAME="Red Hat Enterprise Linux Server 7.1 (Maipo)"

ANSI\_COLOR="0;31"

CPE\_NAME="cpe:/o:redhat:enterprise\_linux:7.1:GA:server"

redhat-release: Red Hat Enterprise Linux Server release 7.1 (Maipo)

system-release: Red Hat Enterprise Linux Server release 7.1 (Maipo)

system-release-cpe: cpe:/o:redhat:enterprise\_linux:7.1:ga:server

uname -a:

Linux C7H170-01 3.10.0-229.el7.x86\_64 #1 SMP Thu Jan 29 18:37:38 EST 2015

x86\_64 x86\_64 x86\_64 GNU/Linux

run-level 3 Oct 20 02:57

SPEC is set to: /usr/cpu2006

Filesystem Type Size Used Avail Use% Mounted on

/dev/sda2 xfs 183G 21G 162G 12% /

Additional information from dmidecode:

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## Platform Notes (Continued)

Warning: Use caution when you interpret this section. The 'dmidecode' program reads system data which is "intended to allow hardware to be accurately determined", but the intent may not be met, as there are frequent changes to hardware, firmware, and the "DMTF SMBIOS" standard.

BIOS American Megatrends Inc. T20151015150001 10/15/2015

Memory:

4x 0420 F4-2800C16-4GRK 4 GB 1 rank 2133 MHz

(End of data from sysinfo program)

## General Notes

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

LD\_LIBRARY\_PATH = "/usr/cpu2006/libs/32:/usr/cpu2006/libs/64:/usr/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

## 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

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Test date: Oct-2015

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## Base Portability Flags (Continued)

```

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:

```

-xCORE-AVX2 -ipo -O3 -no-prec-div -opt-prefetch -auto-p32
-ansi-alias

```

### C++ benchmarks:

```

-xCORE-AVX2 -ipo -O3 -no-prec-div -opt-prefetch -auto-p32
-ansi-alias

```

### 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

```

## 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

```



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## 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
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) -prof-use(pass 2)
         -auto-ilp32

```

```

470.lbm: basepeak = yes

```

```

482.sphinx3: -xCORE-AVX2 -prof-gen(pass 1) -ipo -O3 -no-prec-div
            -prof-use(pass 2) -unroll2

```

### C++ benchmarks:

```

444.namd: -xCORE-AVX2(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: -xCORE-AVX2(pass 2) -prof-gen(pass 1) -ipo(pass 2)
           -O3(pass 2) -no-prec-div(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) -prof-use(pass 2) -unroll4
           -ansi-alias

```

### Fortran benchmarks:

Continued on next page



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## Peak Optimization Flags (Continued)

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) -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.20141230.00.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.20141230.00.xml>

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For other inquiries, please contact [webmaster@spec.org](mailto:webmaster@spec.org).

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