



# SPEC<sup>®</sup> CFP2006 Result

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## Supermicro

Supermicro C7Z170-SQ motherboard  
(C7Z170-SQ , Intel Core i5-6600)

SPECfp<sup>®</sup>2006 = 96.4

SPECfp\_base2006 = 94.1

CPU2006 license: 001176

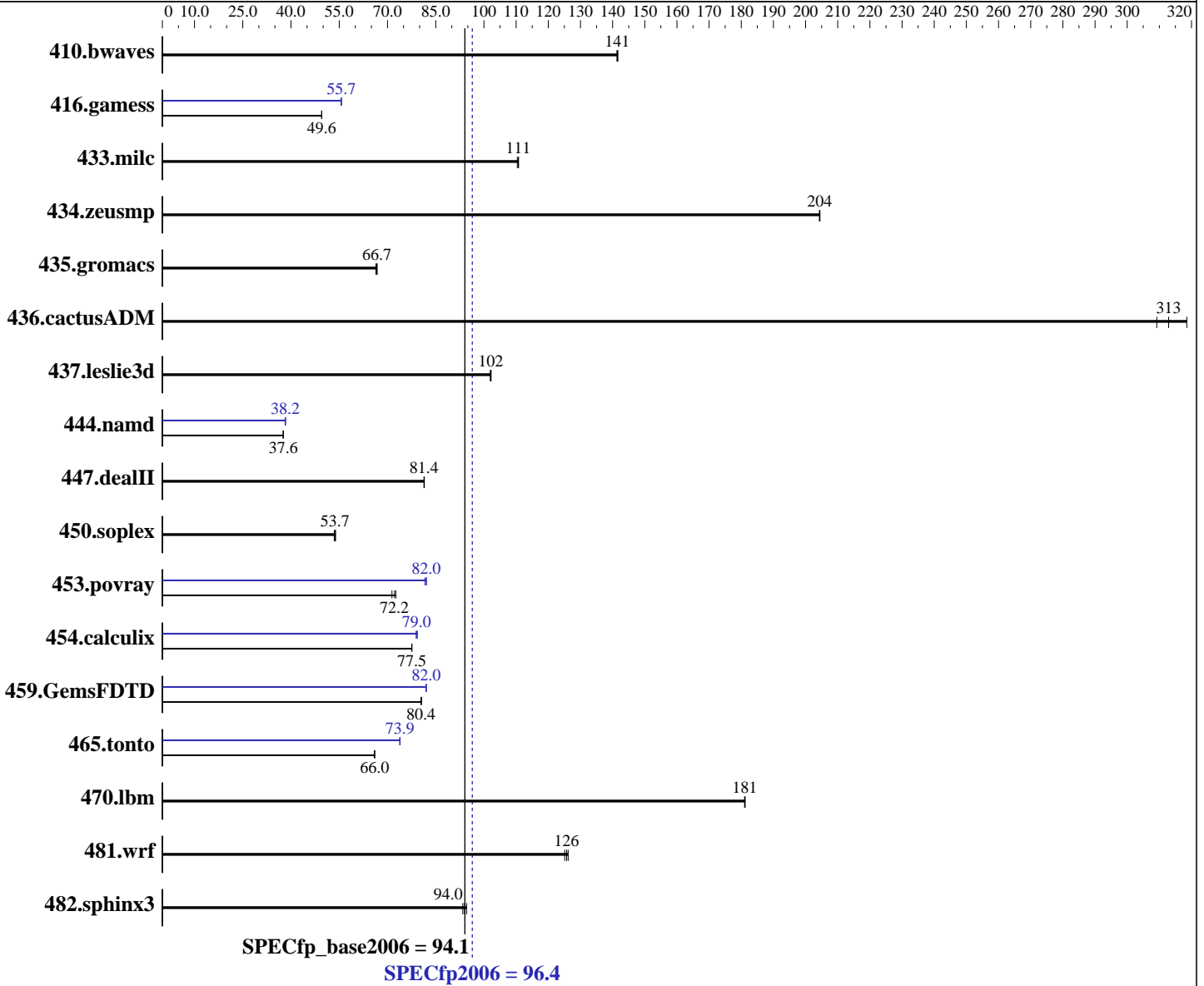
Test sponsor: Supermicro

Tested by: Supermicro

Test date: Dec-2015

Hardware Availability: Sep-2015

Software Availability: Sep-2015



SPECfp\_base2006 = 94.1  
SPECfp2006 = 96.4

### Hardware

CPU Name: Intel Core i5-6600  
 CPU Characteristics: Intel Turbo Boost Technology up to 3.90 GHz  
 CPU MHz: 3300  
 FPU: Integrated  
 CPU(s) enabled: 4 cores, 1 chip, 4 cores/chip  
 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 16.0.0.101 of Intel C++ Studio XE for Linux;  
 Fortran: Version 16.0.0.101 of Intel Fortran Studio XE for Linux  
 Auto Parallel: Yes  
 File System: xfs  
 System State: Run level 3 (multi-user)

Continued on next page



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L3 Cache: 6 MB I+D on chip per chip  
Other Cache: None  
Memory: 16 GB (4 x 4 GB 1Rx8 PC4-2133P-U)  
Disk Subsystem: 1 x 400 GB SATA III SSD  
Other Hardware: None

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	95.9	142	96.2	141	<b><u>96.1</u></b>	<b><u>141</u></b>	95.9	142	96.2	141	<b><u>96.1</u></b>	<b><u>141</u></b>
416.gamess	<b><u>395</u></b>	<b><u>49.6</u></b>	395	49.6	395	49.5	352	55.6	<b><u>352</u></b>	<b><u>55.7</u></b>	352	55.7
433.milc	<b><u>82.9</u></b>	<b><u>111</u></b>	83.2	110	82.9	111	<b><u>82.9</u></b>	<b><u>111</u></b>	83.2	110	82.9	111
434.zeusmp	44.5	204	44.5	204	<b><u>44.5</u></b>	<b><u>204</u></b>	44.5	204	44.5	204	<b><u>44.5</u></b>	<b><u>204</u></b>
435.gromacs	107	66.8	108	66.4	<b><u>107</u></b>	<b><u>66.7</u></b>	107	66.8	108	66.4	<b><u>107</u></b>	<b><u>66.7</u></b>
436.cactusADM	<b><u>38.2</u></b>	<b><u>313</u></b>	37.5	319	38.6	309	<b><u>38.2</u></b>	<b><u>313</u></b>	37.5	319	38.6	309
437.leslie3d	<b><u>92.0</u></b>	<b><u>102</u></b>	92.0	102	92.2	102	<b><u>92.0</u></b>	<b><u>102</u></b>	92.0	102	92.2	102
444.namd	213	37.6	<b><u>213</u></b>	<b><u>37.6</u></b>	213	37.6	210	38.2	<b><u>210</u></b>	<b><u>38.2</u></b>	209	38.3
447.dealII	<b><u>141</u></b>	<b><u>81.4</u></b>	141	81.4	140	81.5	<b><u>141</u></b>	<b><u>81.4</u></b>	141	81.4	140	81.5
450.soplex	156	53.4	<b><u>155</u></b>	<b><u>53.7</u></b>	155	53.9	156	53.4	<b><u>155</u></b>	<b><u>53.7</u></b>	155	53.9
453.povray	73.3	72.6	<b><u>73.7</u></b>	<b><u>72.2</u></b>	74.5	71.4	65.2	81.6	<b><u>64.8</u></b>	<b><u>82.0</u></b>	64.8	82.1
454.calculix	106	77.6	<b><u>106</u></b>	<b><u>77.5</u></b>	106	77.5	<b><u>104</u></b>	<b><u>79.0</u></b>	104	79.3	105	78.9
459.GemsFDTD	132	80.4	132	80.6	<b><u>132</u></b>	<b><u>80.4</u></b>	<b><u>129</u></b>	<b><u>82.0</u></b>	129	82.0	129	82.1
465.tonto	149	66.1	<b><u>149</u></b>	<b><u>66.0</u></b>	149	65.9	133	73.9	133	73.8	<b><u>133</u></b>	<b><u>73.9</u></b>
470.lbm	75.9	181	75.8	181	<b><u>75.9</u></b>	<b><u>181</u></b>	75.9	181	75.8	181	<b><u>75.9</u></b>	<b><u>181</u></b>
481.wrf	<b><u>88.9</u></b>	<b><u>126</u></b>	89.3	125	88.5	126	<b><u>88.9</u></b>	<b><u>126</u></b>	89.3	125	88.5	126
482.sphinx3	<b><u>207</u></b>	<b><u>94.0</u></b>	209	93.4	206	94.6	<b><u>207</u></b>	<b><u>94.0</u></b>	209	93.4	206	94.6

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

As tested, the system used a Supermicro CSE-732G-903B chassis.  
The chassis is configured with a PWS-903-PQ power supply, 1 SNK-P0051AP4 heatsink, as well as 1 FAN-0124L4 rear cooling fan.  
Sysinfo program /usr/cpu2006/config/sysinfo.rev6914  
\$Rev: 6914 \$ \$Date:: 2014-06-25 #\$ e3fbb8667b5a285932ceab81e28219e1  
running on localhost.localdomain Tue Dec 1 22:15:08 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>

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**SPECfp\_base2006 = 94.1**

**CPU2006 license:** 001176

**Test sponsor:** Supermicro

**Tested by:** Supermicro

**Test date:** Dec-2015

**Hardware Availability:** Sep-2015

**Software Availability:** Sep-2015

### Platform Notes (Continued)

```

From /proc/cpuinfo
model name : Intel(R) Core(TM) i5-6600 CPU @ 3.30GHz
1 "physical id"s (chips)
4 "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 : 4
physical 0: cores 0 1 2 3
cache size : 6144 KB

```

```

From /proc/meminfo
MemTotal:      16169696 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 localhost.localdomain 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 Dec 1 05:07

```

SPEC is set to: /usr/cpu2006
Filesystem      Type  Size  Used Avail Use% Mounted on
/dev/sda2        xfs   369G  164G  206G  45% /

```

Additional information from dmidecode:

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 Micron 8ATF51264AZ-2G1A2 4 GB 1 rank 2133 MHz

(End of data from sysinfo program)



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## General Notes

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

KMP\_AFFINITY = "granularity=fine,compact,1,0"

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

OMP\_NUM\_THREADS = "4"

Binaries compiled on a system with 1x Intel Core i5-4670K CPU + 32GB  
memory using RedHat EL 7.1

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  
 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 -parallel -opt-prefetch  
-ansi-alias

C++ benchmarks:

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

Fortran benchmarks:

-xCORE-AVX2 -ipo -O3 -no-prec-div -parallel -opt-prefetch

Benchmarks using both Fortran and C:

-xCORE-AVX2 -ipo -O3 -no-prec-div -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: basepeak = yes

470.lbm: basepeak = yes

482.sphinx3: basepeak = yes

C++ benchmarks:

Continued on next page



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## Peak Optimization Flags (Continued)

444.namd: -xCORE-AVX2(pass 2) -prof-gen:threadsafe(pass 1)  
-ipo(pass 2) -O3(pass 2) -no-prec-div(pass 2)  
-par-num-threads=1(pass 1) -prof-use(pass 2) -fno-alias  
-auto-ilp32

447.dealII: basepeak = yes

450.soplex: basepeak = yes

453.povray: -xCORE-AVX2(pass 2) -prof-gen:threadsafe(pass 1)  
-ipo(pass 2) -O3(pass 2) -no-prec-div(pass 2)  
-par-num-threads=1(pass 1) -prof-use(pass 2) -unroll4  
-ansi-alias

### Fortran benchmarks:

410.bwaves: basepeak = yes

416.gamess: -xCORE-AVX2(pass 2) -prof-gen:threadsafe(pass 1)  
-ipo(pass 2) -O3(pass 2) -no-prec-div(pass 2)  
-par-num-threads=1(pass 1) -prof-use(pass 2) -unroll2  
-inline-level=0 -scalar-rep-

434.zeusmp: basepeak = yes

437.leslie3d: basepeak = yes

459.GemsFDTD: -xCORE-AVX2(pass 2) -prof-gen:threadsafe(pass 1)  
-ipo(pass 2) -O3(pass 2) -no-prec-div(pass 2)  
-par-num-threads=1(pass 1) -prof-use(pass 2) -unroll2  
-inline-level=0 -opt-prefetch -parallel

465.tonto: -xCORE-AVX2(pass 2) -prof-gen:threadsafe(pass 1)  
-ipo(pass 2) -O3(pass 2) -no-prec-div(pass 2)  
-par-num-threads=1(pass 1) -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: -xCORE-AVX2 -ipo -O3 -no-prec-div -auto-ilp32 -ansi-alias

481.wrf: basepeak = yes



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The flags files that were used to format this result can be browsed at

<http://www.spec.org/cpu2006/flags/Intel-ic16.0-official-linux64.html>

<http://www.spec.org/cpu2006/flags/Supermicro-Platform-Settings-V1.2-revH.html>

You can also download the XML flags sources by saving the following links:

<http://www.spec.org/cpu2006/flags/Intel-ic16.0-official-linux64.xml>

<http://www.spec.org/cpu2006/flags/Supermicro-Platform-Settings-V1.2-revH.xml>

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

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