# SPEC® CFP2006 Result

Supermicro

Supermicro C7Z170-OCE motherboard
(C7Z170-OCE, Intel Core i5-6400T)

<table>
<thead>
<tr>
<th>SPECfp®2006</th>
<th>78.2</th>
</tr>
</thead>
<tbody>
<tr>
<td>SPECfp_base2006</td>
<td>76.2</td>
</tr>
</tbody>
</table>

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

Test date: Jan-2016
Hardware Availability: Sep-2015
Software Availability: Sep-2015

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>410.bwaves</td>
<td>40.0</td>
</tr>
<tr>
<td>416.gamess</td>
<td>34.9</td>
</tr>
<tr>
<td>433.milc</td>
<td>92.0</td>
</tr>
<tr>
<td>434.zeusmp</td>
<td>174</td>
</tr>
<tr>
<td>435.gromacs</td>
<td>46.4</td>
</tr>
<tr>
<td>436.cactusADM</td>
<td></td>
</tr>
<tr>
<td>437.leslie3d</td>
<td>99.6</td>
</tr>
<tr>
<td>444.namd</td>
<td>27.0</td>
</tr>
<tr>
<td>447.dealII</td>
<td>59.4</td>
</tr>
<tr>
<td>450.soplex</td>
<td>43.2</td>
</tr>
<tr>
<td>453.povray</td>
<td>59.2</td>
</tr>
<tr>
<td>454.calculix</td>
<td>52.5</td>
</tr>
<tr>
<td>459.GemsFDTD</td>
<td>79.6</td>
</tr>
<tr>
<td>465.tonto</td>
<td>53.6</td>
</tr>
<tr>
<td>470.lbm</td>
<td>46.7</td>
</tr>
<tr>
<td>481.wrf</td>
<td>104</td>
</tr>
<tr>
<td>482.sphinx3</td>
<td>68.5</td>
</tr>
</tbody>
</table>

SPECfp_base2006 = 76.2
SPECfp2006 = 78.2

## Hardware

<table>
<thead>
<tr>
<th>Feature</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>CPU Name</td>
<td>Intel Core i5-6400T</td>
</tr>
<tr>
<td>CPU Characteristics</td>
<td>Intel Turbo Boost Technology up to 2.80 GHz</td>
</tr>
<tr>
<td>CPU MHz</td>
<td>2200</td>
</tr>
<tr>
<td>FPU</td>
<td>Integrated</td>
</tr>
<tr>
<td>CPU(s) enabled</td>
<td>4 cores, 1 chip, 4 cores/chip</td>
</tr>
<tr>
<td>CPU(s) orderable</td>
<td>1 chip</td>
</tr>
<tr>
<td>Primary Cache</td>
<td>32 KB I + 32 KB D on chip per core</td>
</tr>
<tr>
<td>Secondary Cache</td>
<td>256 KB I+D on chip per core</td>
</tr>
</tbody>
</table>

## Software

<table>
<thead>
<tr>
<th>Feature</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operating System</td>
<td>Red Hat Enterprise Linux Server release 7.1,</td>
</tr>
<tr>
<td></td>
<td>Kernel 3.10.0-229.el7.x86_64</td>
</tr>
<tr>
<td>Compiler</td>
<td>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</td>
</tr>
<tr>
<td>Auto Parallel</td>
<td>Yes</td>
</tr>
<tr>
<td>File System</td>
<td>xfs</td>
</tr>
<tr>
<td>System State</td>
<td>Run level 3 (multi-user)</td>
</tr>
</tbody>
</table>

Continued on next page
## SPEC CFP2006 Result

**Supermicro**

Supermicro C7Z170-OCE motherboard (C7Z170-OCE , Intel Core i5-6400T)

**SPECfp2006 = 78.2**

**SPECfp_base2006 = 76.2**

---

### Results Table

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Seconds</th>
<th>Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>410.bwaves</td>
<td>97.6</td>
<td>139</td>
<td>96.9</td>
<td>140</td>
<td>97.2</td>
<td>140</td>
<td>97.6</td>
<td>139</td>
<td>96.9</td>
<td>140</td>
<td>97.2</td>
<td>140</td>
</tr>
<tr>
<td>416.gamess</td>
<td>561</td>
<td>34.9</td>
<td>561</td>
<td>34.9</td>
<td>561</td>
<td>34.9</td>
<td>490</td>
<td>40.0</td>
<td>490</td>
<td>40.0</td>
<td>490</td>
<td>40.0</td>
</tr>
<tr>
<td>433.milc</td>
<td>100</td>
<td>91.7</td>
<td>99.8</td>
<td>92.0</td>
<td>99.8</td>
<td>92.0</td>
<td>100</td>
<td>91.7</td>
<td>99.8</td>
<td>92.0</td>
<td>99.8</td>
<td>92.0</td>
</tr>
<tr>
<td>434.zeusmp</td>
<td>52.3</td>
<td>174</td>
<td>52.3</td>
<td>174</td>
<td>52.3</td>
<td>174</td>
<td>52.3</td>
<td>174</td>
<td>52.3</td>
<td>174</td>
<td>52.3</td>
<td>174</td>
</tr>
<tr>
<td>435.gromacs</td>
<td>154</td>
<td>46.4</td>
<td>155</td>
<td>46.2</td>
<td>154</td>
<td>46.4</td>
<td>154</td>
<td>46.4</td>
<td>155</td>
<td>46.2</td>
<td>154</td>
<td>46.4</td>
</tr>
<tr>
<td>436.cactusADM</td>
<td>42.5</td>
<td>281</td>
<td>42.8</td>
<td>279</td>
<td>42.6</td>
<td>281</td>
<td>42.5</td>
<td>281</td>
<td>42.8</td>
<td>279</td>
<td>42.6</td>
<td>281</td>
</tr>
<tr>
<td>437.leslie3d</td>
<td>94.3</td>
<td>99.7</td>
<td>94.3</td>
<td>99.6</td>
<td>94.3</td>
<td>99.6</td>
<td>94.3</td>
<td>99.7</td>
<td>95.0</td>
<td>98.9</td>
<td>94.3</td>
<td>99.6</td>
</tr>
<tr>
<td>444.namd</td>
<td>297</td>
<td>27.0</td>
<td>297</td>
<td>27.0</td>
<td>298</td>
<td>26.9</td>
<td>292</td>
<td>27.5</td>
<td>292</td>
<td>27.5</td>
<td>292</td>
<td>27.5</td>
</tr>
<tr>
<td>447.dealII</td>
<td>192</td>
<td>59.4</td>
<td>192</td>
<td>59.4</td>
<td>192</td>
<td>59.4</td>
<td>192</td>
<td>59.5</td>
<td>193</td>
<td>59.4</td>
<td>192</td>
<td>59.4</td>
</tr>
<tr>
<td>450.soplex</td>
<td>192</td>
<td>43.4</td>
<td>195</td>
<td>42.8</td>
<td>193</td>
<td>43.2</td>
<td>192</td>
<td>43.4</td>
<td>195</td>
<td>42.8</td>
<td>193</td>
<td>43.2</td>
</tr>
<tr>
<td>453.povray</td>
<td>101</td>
<td>52.5</td>
<td>102</td>
<td>52.3</td>
<td>98.8</td>
<td>53.9</td>
<td>89.7</td>
<td>59.3</td>
<td>89.9</td>
<td>59.2</td>
<td>92.0</td>
<td>57.8</td>
</tr>
<tr>
<td>454.calculix</td>
<td>147</td>
<td>56.3</td>
<td>147</td>
<td>56.2</td>
<td>147</td>
<td>56.2</td>
<td>143</td>
<td>57.6</td>
<td>143</td>
<td>57.6</td>
<td>143</td>
<td>57.5</td>
</tr>
<tr>
<td>459.GemsFDTD</td>
<td>136</td>
<td>78.0</td>
<td>136</td>
<td>78.1</td>
<td>136</td>
<td>78.0</td>
<td>134</td>
<td>79.4</td>
<td>133</td>
<td>79.6</td>
<td>133</td>
<td>79.7</td>
</tr>
<tr>
<td>465.tonto</td>
<td>210</td>
<td>46.7</td>
<td>210</td>
<td>46.7</td>
<td>211</td>
<td>46.7</td>
<td>184</td>
<td>53.6</td>
<td>183</td>
<td>53.7</td>
<td>184</td>
<td>53.5</td>
</tr>
<tr>
<td>470.lbm</td>
<td>76.1</td>
<td>180</td>
<td>76.0</td>
<td>180</td>
<td>76.1</td>
<td>180</td>
<td>76.1</td>
<td>180</td>
<td>76.1</td>
<td>180</td>
<td>76.1</td>
<td>180</td>
</tr>
<tr>
<td>481.wrf</td>
<td>107</td>
<td>104</td>
<td>107</td>
<td>105</td>
<td>107</td>
<td>104</td>
<td>107</td>
<td>104</td>
<td>107</td>
<td>105</td>
<td>107</td>
<td>104</td>
</tr>
<tr>
<td>482.sphinx3</td>
<td>285</td>
<td>68.5</td>
<td>286</td>
<td>68.1</td>
<td>284</td>
<td>68.6</td>
<td>285</td>
<td>68.5</td>
<td>286</td>
<td>68.1</td>
<td>284</td>
<td>68.6</td>
</tr>
</tbody>
</table>

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-743TQ-1200B-SQ chassis. The chassis is configured with a PWS-1K25P-PQ power supply, 1 SNK-P0051AP4 heatsink, as well as 1 PAN-0103L4 rear fan and 2 PAN-0104L4 chassis fan.

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

$Rev: 6914 $ $Date:: 2014-06-25 #$ e3fbb8667b5a285932ceab81e28219e1
running on C7Z170-01 Tue Jan  5 10:31:36 2016

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

Continued on next page
Supermicro
Supermicro C7Z170-OCE motherboard
(C7Z170-OCE, Intel Core i5-6400T)

SPECfp2006 = 78.2
SPECfp_base2006 = 76.2

<table>
<thead>
<tr>
<th>CPU2006 license</th>
<th>001176</th>
</tr>
</thead>
<tbody>
<tr>
<td>Test sponsor</td>
<td>Supermicro</td>
</tr>
<tr>
<td>Tested by</td>
<td>Supermicro</td>
</tr>
<tr>
<td>Test date</td>
<td>Jan-2016</td>
</tr>
<tr>
<td>Hardware Availability</td>
<td>Sep-2015</td>
</tr>
<tr>
<td>Software Availability</td>
<td>Sep-2015</td>
</tr>
</tbody>
</table>

Platform Notes (Continued)

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

From /proc/cpuinfo
  model name : Intel(R) Core(TM) i5-6400T CPU @ 2.20GHz
  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:       16206808 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)

  uname -a:
    Linux C7Z170-01 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 Jan 5 04:57

SPEC is set to: /usr/cpu2006

<table>
<thead>
<tr>
<th>Filesystem</th>
<th>Type</th>
<th>Size</th>
<th>Used</th>
<th>Avail</th>
<th>Use%</th>
<th>Mounted on</th>
</tr>
</thead>
<tbody>
<tr>
<td>/dev/sda2</td>
<td>xfs</td>
<td>183G</td>
<td>32G</td>
<td>151G</td>
<td>18%</td>
<td></td>
</tr>
</tbody>
</table>

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. 1.0 12/14/2015
  Memory:
    4x 0420 F4-2800C16-4GRK 4 GB 1 rank 2133 MHz

Continued on next page
Supermicro
Supermicro C7Z170-OCE motherboard (C7Z170-OCE, Intel Core i5-6400T)

| SPECfp2006 | 78.2 |
| SPECfp_base2006 | 76.2 |

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

Test date: Jan-2016
Hardware Availability: Sep-2015
Software Availability: Sep-2015

Platform Notes (Continued)

(End of data from sysinfo program)

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.game56: -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

Continued on next page
Supermicro
Supermicro C7Z170-OCE motherboard (C7Z170-OCE, Intel Core i5-6400T)

<table>
<thead>
<tr>
<th>CPU2006 license: 001176</th>
<th>Test date: Jan-2016</th>
</tr>
</thead>
<tbody>
<tr>
<td>Test sponsor: Supermicro</td>
<td>Hardware Availability: Sep-2015</td>
</tr>
<tr>
<td>Tested by: Supermicro</td>
<td>Software Availability: Sep-2015</td>
</tr>
</tbody>
</table>

**SPEC CFP2006 Result**

| SPECfp2006 = | 78.2 |
| SPECfp_base2006 = | 76.2 |

**Base Portability Flags (Continued)**

- 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 -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:

Continued on next page
Supermicro
Supermicro C7Z170-OCE motherboard
(C7Z170-OCE , Intel Core i5-6400T)

SPEC CFP2006 Result

SPECfp2006 = 78.2
SPECfp_base2006 = 76.2

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

Test date: Jan-2016
Hardware Availability: Sep-2015
Software Availability: Sep-2015

Peak Optimization Flags (Continued)

433.milc: basepeak = yes
470.lbm: basepeak = yes
482.sphinx3: basepeak = yes

C++ benchmarks:

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

Continued on next page
## Supermicro

Supermicro C7Z170-OCE motherboard  
(C7Z170-OCE, Intel Core i5-6400T)

### SPEC CFP2006 Result

<table>
<thead>
<tr>
<th>SPECfp2006</th>
<th>78.2</th>
</tr>
</thead>
<tbody>
<tr>
<td>SPECfp_base2006</td>
<td>76.2</td>
</tr>
</tbody>
</table>

**CPU2006 license:** 001176  
**Test date:** Jan-2016  
**Test sponsor:** Supermicro  
**Hardware Availability:** Sep-2015  
**Tested by:** Supermicro  
**Software Availability:** Sep-2015

### Peak Optimization Flags (Continued)

<table>
<thead>
<tr>
<th>Compilations</th>
</tr>
</thead>
<tbody>
<tr>
<td>436.cactusADM: basepeak = yes</td>
</tr>
<tr>
<td>454.calculix: -xCORE-AVX2 -ipo -O3 -no-prec-div -auto-ilp32 -ansi-alias</td>
</tr>
<tr>
<td>481.wrf: basepeak = yes</td>
</tr>
</tbody>
</table>

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


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


SPEC and SPECfp are registered trademarks of the Standard Performance Evaluation Corporation. All other brand and product names appearing in this result are trademarks or registered trademarks of their respective holders.

For questions about this result, please contact the tester.  
For other inquiries, please contact webmaster@spec.org.

Tested with SPEC CPU2006 v1.2.  
Report generated on Tue Jan 26 15:11:52 2016 by SPEC CPU2006 PS/PDF formatter v6932.  
Originally published on 26 January 2016.