## SPEC® CFP2006 Result

### Supermicro

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

<table>
<thead>
<tr>
<th>SPECfp®2006</th>
<th>96.4</th>
</tr>
</thead>
<tbody>
<tr>
<td>SPECfp_base2006</td>
<td>94.2</td>
</tr>
</tbody>
</table>

### Hardware

<table>
<thead>
<tr>
<th><strong>CPU Name:</strong></th>
<th>Intel Core i7-6700</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>CPU Characteristics:</strong></td>
<td>Intel Turbo Boost Technology up to 4.00 GHz</td>
</tr>
<tr>
<td><strong>CPU MHz:</strong></td>
<td>3400</td>
</tr>
<tr>
<td><strong>FPU:</strong></td>
<td>Integrated</td>
</tr>
<tr>
<td><strong>CPU(s) enabled:</strong></td>
<td>4 cores, 1 chip, 4 cores/chip, 2 threads/core</td>
</tr>
<tr>
<td><strong>CPU(s) orderable:</strong></td>
<td>1 chip</td>
</tr>
<tr>
<td><strong>Primary Cache:</strong></td>
<td>32 KB I + 32 KB D on chip per core</td>
</tr>
<tr>
<td><strong>Secondary Cache:</strong></td>
<td>256 KB I+D on chip per core</td>
</tr>
</tbody>
</table>

### Software

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

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Supermicro

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

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

**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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Run level 3 (multi-user)
Supermicro

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

SPECfp2006 = 96.4
SPECfp_base2006 = 94.2

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

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
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

Results Table

<table>
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<tr>
<th>Benchmark</th>
<th>Base Seconds</th>
<th>Base Ratio</th>
<th>Peak Seconds</th>
<th>Peak Ratio</th>
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<td>410.bwaves</td>
<td>95.2</td>
<td>143</td>
<td>95.2</td>
<td>143</td>
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<td>416.gamess</td>
<td>396</td>
<td>49.4</td>
<td>395</td>
<td>49.5</td>
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<td>433.milc</td>
<td>84.5</td>
<td>109</td>
<td>84.6</td>
<td>109</td>
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<tr>
<td>434.zesump</td>
<td>43.7</td>
<td>208</td>
<td>43.6</td>
<td>209</td>
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<tr>
<td>435.gromacs</td>
<td>118</td>
<td>60.7</td>
<td>118</td>
<td>60.3</td>
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<td>436.cactusADM</td>
<td>34.3</td>
<td>349</td>
<td>34.3</td>
<td>349</td>
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<td>437.leslie3d</td>
<td>87.8</td>
<td>107</td>
<td>87.9</td>
<td>107</td>
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<td>444.namd</td>
<td>217</td>
<td>37.0</td>
<td>217</td>
<td>37.0</td>
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<tr>
<td>447.dealII</td>
<td>153</td>
<td>74.6</td>
<td>153</td>
<td>74.6</td>
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<tr>
<td>450.soplex</td>
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<td>56.4</td>
<td>148</td>
<td>56.4</td>
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<td>453.povray</td>
<td>74.8</td>
<td>71.2</td>
<td>74.4</td>
<td>74.3</td>
</tr>
<tr>
<td>454.calculix</td>
<td>110</td>
<td>74.7</td>
<td>110</td>
<td>74.7</td>
</tr>
<tr>
<td>459.GemsFDTD</td>
<td>129</td>
<td>82.6</td>
<td>129</td>
<td>82.6</td>
</tr>
<tr>
<td>465.tonto</td>
<td>155</td>
<td>63.6</td>
<td>154</td>
<td>63.7</td>
</tr>
<tr>
<td>470.lbm</td>
<td>75.5</td>
<td>182</td>
<td>75.6</td>
<td>182</td>
</tr>
<tr>
<td>481.wrf</td>
<td>87.5</td>
<td>128</td>
<td>87.6</td>
<td>128</td>
</tr>
<tr>
<td>482.sphinx3</td>
<td>195</td>
<td>100</td>
<td>196</td>
<td>99.7</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-865B-SQ chassis.
The chassis is configured with a PWS-865-0Q power supply, 1 SNK-P0046A4 heatsink, as well as 1 PAN-0104L4 rear fan and 2 PAN-0104L4 chassis fan.
Sysinfo program /usr/cpu2006/config/sysinfo.rev6914
$Rev: 6914 $ $Date:: 2014-06-25 #$ e3fbb8667b5a285932ceab81e28219e1
running on C7H170-01 Wed Oct 21 01:29:12 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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Supermicro C7H170-M motherboards
(C7H170-M, Intel Core i7-6700)

SPECfp2006 = 96.4
SPECfp_base2006 = 94.2

CPU2006 license: 001176
Test sponsor: Supermicro
Test date: Oct-2015
Tested by: Supermicro
Hardware Availability: Sep-2015
Software Availability: Sep-2014

Platform Notes (Continued)

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
cautions.)
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)

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 24G 159G 13% /

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

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

SPECfp2006 = 96.4
SPECfp_base2006 = 94.2

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 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
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

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

SPECfp2006 = 96.4
SPECfp_base2006 = 94.2

Base Portability Flags (Continued)
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:
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 -ansi-alias
Supermicro
Supermicro C7H170-M motherboard
(C7H170-M, Intel Core i7-6700)

SPECfp2006 = 96.4
SPECfp_base2006 = 94.2

Peak Optimization Flags (Continued)

470.lbm: basepeak = yes
482.sphinx3: -xCORE-AVX2 -ipo -O3 -no-prec-div -unroll2 -ansi-alias
-parallel

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: basepeak = yes
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:
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: basepeak = yes
459.GemsFDTD: -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 -opt-prefetch -parallel
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)
-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

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

**SPEC fp2006** = 96.4
**SPEC fp_base2006** = 94.2

| CPU2006 license: | 001176 |
| Test sponsor: | Supermicro |
| Tested by: | Supermicro |
| Test date: | Oct-2015 |
| Hardware Availability: | Sep-2015 |
| Software Availability: | Sep-2014 |

### Peak Optimization Flags (Continued)

481.wrf: basepeak = yes

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 questions about this result, please contact the tester.

For other inquiries, please contact webmaster@spec.org.

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