Supermicro
Supermicro C7H170-M motherboard
(C7H170-M, Intel Core i5-6400T)  

CPU2006 license: 001176
Test sponsor: Supermicro
Tested by: Supermicro
CPU Name: Intel Core i5-6400T
CPU Characteristics: Intel Turbo Boost Technology up to 2.80 GHz
CPU MHz: 2200
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

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: Yes
File System: xfs
System State: Run level 3 (multi-user)

Hardware

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Score</th>
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</thead>
<tbody>
<tr>
<td>410.bwaves</td>
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<tr>
<td>416.gamess</td>
<td>34.9</td>
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<td>433.milc</td>
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<td>434.zeusmp</td>
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<td>435.gromacs</td>
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<td>436.cactusADM</td>
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<td>437.leslie3d</td>
<td>99.6</td>
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<td>27.3</td>
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<td>447.dealII</td>
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<td>450.soplex</td>
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<td>454.calculix</td>
<td>54.2</td>
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<tr>
<td>459.GemsFDTD</td>
<td></td>
</tr>
<tr>
<td>465.tonto</td>
<td>52.8</td>
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<tr>
<td>470.lbm</td>
<td>44.7</td>
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<tr>
<td>481.wrf</td>
<td>102</td>
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<td>482.sphinx3</td>
<td>68.3</td>
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SPECfp®2006 = 76.7
SPECfp_base2006 = 74.3
**SPEC CFP2006 Result**

Supermicro

Supermicro C7H170-M motherboard (C7H170-M, Intel Core i5-6400T)

**CPU2006 license:** 001176

**Test sponsor:** Supermicro

**Tested by:** Supermicro

**Test date:** Oct-2015

**Hardware Availability:** Sep-2015

**Software Availability:** Sep-2014

**L3 Cache:** 6 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:** 64-bit

**Peak Pointers:** 32/64-bit

**Other Software:** None

---

### Results Table

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Seconds Base</th>
<th>Ratio Base</th>
<th>Seconds Ratio Base</th>
<th>Seconds Peak</th>
<th>Ratio Peak</th>
<th>Seconds Ratio Peak</th>
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<td>67.9</td>
<td>288</td>
<td>67.6</td>
</tr>
</tbody>
</table>

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

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### 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-PQ power supply, 1 SNK-P0046A4 heatsink, as well as 1 PAM-0103L4 rear fan and 2 PAM-0104L4 chassis fan.

Sysinfo program /usr/cpu2006/config/sysinfo.rev6914
$Rev: 6914 $ $Date:: 2014-06-25 #$ e3fbb8667b5a285932ceab81e28219e1
running on C7H170-01 Thu Oct 22 20:30:21 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
Supermicro C7H170-M motherboard
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SPECfp2006 = 76.7
SPECfp_base2006 = 74.3

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

Platform Notes (Continued)

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
cautions.)
cpu cores: 4
siblings: 4
physical 0: cores 0 1 2 3
  cache size: 6144 KB

From /proc/meminfo
  MemTotal: 16334556 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 21 23:03

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

Test date: Oct-2015
Hardware Availability: Sep-2015
Software Availability: Sep-2014

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.lesle3d: -DSPEC_CPU_LP64
444.namd: -DSPEC_CPU_LP64
447.dealiII: -DSPEC_CPU_LP64
450.soplex: -DSPEC_CPU_LP64
453.povray: -DSPEC_CPU_LP64 -nofor_main
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
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SPECfp2006 = 76.7
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Test sponsor: Supermicro
Tested by: Supermicro

Test date: Oct-2015
Hardware Availability: Sep-2015
Software Availability: Sep-2014

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)
-03(pass 2) -no-prec-div(pass 2) -prof-use(pass 2)
-auto-ilp32 -ansi-alias

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Supermicro C7H170-M motherboard
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SPECfp_base2006 = 74.3

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

### Peak Optimization Flags (Continued)

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<tr>
<th>Benchmark</th>
<th>Flags and Options</th>
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<tr>
<td>470.lbm</td>
<td>basepeak = yes</td>
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<tr>
<td>482.sphinx3</td>
<td>-xCORE-AVX2 -ipo -O3 -no-prec-div -unroll2 -ansi-alias -parallel</td>
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<tr>
<td>C++ benchmarks:</td>
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<tr>
<td>444.namd</td>
<td>-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</td>
</tr>
<tr>
<td>447.dealII</td>
<td>basepeak = yes</td>
</tr>
<tr>
<td>450.soplex</td>
<td>basepeak = yes</td>
</tr>
<tr>
<td>453.povray</td>
<td>-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</td>
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<tr>
<td>Fortran benchmarks:</td>
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<tr>
<td>410.bwaves</td>
<td>basepeak = yes</td>
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<tr>
<td>416.gamess</td>
<td>-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-</td>
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<tr>
<td>434.zeusmp</td>
<td>basepeak = yes</td>
</tr>
<tr>
<td>437.leslie3d</td>
<td>basepeak = yes</td>
</tr>
<tr>
<td>459.GemsFDTD</td>
<td>-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</td>
</tr>
<tr>
<td>465.tonto</td>
<td>-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</td>
</tr>
<tr>
<td>Benchmarks using both Fortran and C:</td>
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<tr>
<td>435.gromacs</td>
<td>basepeak = yes</td>
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<td>436.cactusADM</td>
<td>basepeak = yes</td>
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<tr>
<td>454.calculix</td>
<td>-xCORE-AVX2 -ipo -O3 -no-prec-div -auto-ilp32 -ansi-alias</td>
</tr>
</tbody>
</table>

Continued on next page
Supermicro C7H170-M motherboard
(C7H170-M, Intel Core i5-6400T)

SPECfp2006 = 76.7
SPECfp_base2006 = 74.3

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 other inquiries, please contact webmaster@spec.org.

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