# SPEC® CFP2006 Result

## Supermicro
SuperWorkstation 5039A-iL (X11SAE , Intel Core i7-6700T)

### CPU2006 Information
- **CPU2006 license:** 001176
- **Test sponsor:** Supermicro
- **Tested by:** Supermicro
- **Hardware Availability:** Sep-2015
- **Software Availability:** Sep-2015

### SPECfp2006 Results

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Result</th>
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</thead>
<tbody>
<tr>
<td>SPECfp2006</td>
<td>92.8</td>
</tr>
<tr>
<td>SPECfp_base2006</td>
<td>91.0</td>
</tr>
</tbody>
</table>

### Hardware
- **CPU Name:** Intel Core i7-6700T
- **CPU Characteristics:** Intel Turbo Boost Technology up to 3.60 GHz
- **CPU MHz:** 2800
- **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 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)

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Standard Performance Evaluation Corporation
info@spec.org
http://www.spec.org/
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SuperWorkstation 5039A-iL  
(X11SAE, Intel Core i7-6700T)

<table>
<thead>
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<th>Benchmark</th>
<th>Seconds</th>
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<td>98.9</td>
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<td>92.9</td>
<td>207</td>
<td>94.3</td>
<td>209</td>
<td>93.4</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

BIOS Settings:  
Hyper-threading = Disabled  
Sysinfo program /home/cpu2006/config/sysinfo.rev6914  
$Rev: 6914 $ $Date:: 2014-06-25 #e3fbb8667b5a285932ceab81e28219e1 running on localhost.localdomain Tue Jan 12 06:23:59 2016

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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SPECfp2006 = 92.8
SPECfp_base2006 = 91.0

Platform Notes (Continued)

From /proc/cpuinfo
  model name: Intel(R) Core(TM) i7-6700T CPU @ 2.80GHz
  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: 8192 KB

From /proc/meminfo
  MemTotal: 65581696 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 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 Jan 12 01:52

SPEC is set to: /home/cpu2006
  Filesystem Type Size Used Avail Use% Mounted on
  /dev/mapper/rhel-home xfs 850G 5.1G 845G 1% /home

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. 1.0a 12/01/2015
  Memory:
  4x Samsung M391A2K43BB1-CPB 16 GB 2 rank 2133 MHz

(End of data from sysinfo program)
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Environment variables set by runspec before the start of the run:
KMP_AFFINITY = "granularity=fine,compact,1,0"
LD_LIBRARY_PATH = "/home/cpu2006/libs/32:/home/cpu2006/libs/64:/home/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

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:

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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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