Supermicro
SuperServer 5029S-TN2
(X11SSV-Q, Intel Core i5-6600K)

SPECfp®2006 = 96.9
SPECfp_base2006 = 94.5

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

410.bwaves
416.gamess
433.milc
434.zeusmp
435.gromacs
436.cactusADM
437.leslie3d
444.namd
447.dealII
450.soplex
453.povray
454.calculix
459.GemsFDTD
465.tonto
470.lbm
481.wrf
482.sphinx3

Hardware
CPU Name: Intel Core i5-6600K
CPU Characteristics: Intel Turbo Boost Technology up to 3.90 GHz
CPU MHz: 3500
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)
Supermicro
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L3 Cache: 6 MB I+D on chip per chip
Other Cache: None
Memory: 16 GB (2 x 8 GB 2Rx8 PC4-2133P-U)
Disk Subsystem: 1 x 750 GB SATA III, 7200 RPM
Other Hardware: None

Base Pointers: 64-bit
Peak Pointers: 32/64-bit
Other Software: None

SPECfp2006 = 96.9
SPECfp_base2006 = 94.5

Benchmark | Seconds | Ratio | Seconds | Ratio | Seconds | Ratio | Seconds | Ratio | Seconds | Ratio | Seconds | Ratio
--- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | ---
410.bwaves | 94.2 | 144 | 94.3 | 144 | 94.2 | 144 | 94.0 | 145 | 94.3 | 144 | 94.0 | 145 | 94.3 | 144
416.gamess | 396 | 49.5 | 396 | 49.4 | 396 | 49.4 | 354 | 55.3 | 353 | 55.4 | 354 | 55.4
433.milc | 82.1 | 112 | 82.2 | 112 | 82.1 | 112 | 82.1 | 112 | 82.1 | 112 | 82.1 | 112
434.zeusmp | 44.1 | 206 | 44.1 | 206 | 44.1 | 206 | 44.1 | 206 | 44.1 | 206 | 44.1 | 206
435.gromacs | 107 | 66.7 | 107 | 66.7 | 107 | 66.7 | 107 | 66.7 | 107 | 66.7 | 107 | 66.7
436.cactusADM | 37.2 | 315 | 37.8 | 316 | 37.2 | 315 | 37.2 | 315 | 37.2 | 315 | 37.2 | 315
437.leslie3d | 91.1 | 103 | 91.1 | 103 | 91.1 | 103 | 91.1 | 103 | 91.1 | 103 | 91.1 | 103
444.namd | 214 | 37.6 | 214 | 37.5 | 214 | 37.4 | 210 | 38.2 | 210 | 38.2 | 210 | 38.2
447.dealII | 141 | 81.3 | 141 | 81.3 | 141 | 81.3 | 141 | 81.3 | 141 | 81.3 | 141 | 81.3
450.soplex | 153 | 54.5 | 154 | 54.2 | 154 | 54.1 | 153 | 54.5 | 154 | 54.2 | 154 | 54.2
453.povray | 73.1 | 72.8 | 74.0 | 71.9 | 74.0 | 71.9 | 65.4 | 81.3 | 63.6 | 83.6 | 63.5 | 83.8
454.calculix | 106 | 77.5 | 106 | 77.5 | 106 | 77.5 | 104 | 79.3 | 105 | 78.9 | 105 | 78.9
459.GemsFDTD | 130 | 81.6 | 130 | 81.6 | 130 | 81.4 | 128 | 83.1 | 127 | 83.2 | 128 | 83.0
465.tonto | 149 | 65.9 | 149 | 65.9 | 149 | 66.0 | 134 | 73.4 | 133 | 73.8 | 134 | 73.6
470.lbm | 75.4 | 182 | 75.4 | 182 | 75.4 | 182 | 75.4 | 182 | 75.4 | 182 | 75.4 | 182
481.wrf | 88.5 | 126 | 88.5 | 126 | 88.5 | 126 | 88.5 | 126 | 88.5 | 126 | 88.5 | 126
482.sphinx3 | 206 | 94.6 | 207 | 94.0 | 208 | 93.8 | 206 | 94.0 | 207 | 94.0 | 208 | 93.8

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
Sysinfo program /home/cpu2006/config/sysinfo.rev6914
$Rev: 6914 $ $Date:: 2014-06-25 #$ e3fbb8667b5a285932ceab81e28219e1
running on localhost.localdomain Tue Nov 10 22:09:29 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

From /proc/cpuinfo
model name : Intel(R) Core(TM) i5-6600K CPU @ 3.50GHz
Continued on next page
Supermicro
SuperServer 5029S-TN2
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Platform Notes (Continued)

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: 16035188 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 Nov 11 01:31

SPEC is set to: /home/cpu2006
  Filesystem    Type  Size  Used Avail Use% Mounted on
  /dev/mapper/rhel-home xfs 216G 20G 196G 10% /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 11/03/2015
Memory:
  2x Samsung M471A1G43DB0-CPB 8 GB 2 rank 2133 MHz

(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 = "/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

**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
- 436.cactusADM: -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
- 459.GemsFDTD: -DSPEC_CPU_LP64
- 465.tonto: -DSPEC_CPU_LP64
- 470.lbm: -DSPEC_CPU_LP64
- 481.wrf: -DSPEC_CPU_LP64
- 482.sphinx3: -DSPEC_CPU_LP64
Supermicro
SuperServer 5029S-TN2 (X11SSV-Q, Intel Core i5-6600K)

SPEC CFP2006 Result

SPECfp2006 = 96.9
SPECfp_base2006 = 94.5

CPU2006 license: 001176
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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
**SPEC CFP2006 Result**

**Supermicro**
SuperServer 5029S-TN2 (X11SSV-Q, Intel Core i5-6600K)

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>SPECfp2006</th>
<th>SPECfp_base2006</th>
</tr>
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<tbody>
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<td></td>
<td>96.9</td>
<td>94.5</td>
</tr>
</tbody>
</table>

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

**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:

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

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

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