## SPEC® CINT2006 Result

**Supermicro**

SuperWorkstation 5029A-iL (X11SAE, Intel Core i5-6400T)

| SPECint®2006 | 52.9 |
| SPECint_base2006 | 51.3 |

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

### Software

<table>
<thead>
<tr>
<th>Operating System</th>
<th>Red Hat Enterprise Linux Server release 7.1 (Maipo)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Compiler</td>
<td>C/C++: Version 16.0.0.101 of Intel C++ 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>
<tr>
<td>Base Pointers</td>
<td>32/64-bit</td>
</tr>
<tr>
<td>Peak Pointers</td>
<td>32/64-bit</td>
</tr>
<tr>
<td>Other Software</td>
<td>Microquill SmartHeap V10.2</td>
</tr>
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### Hardware

<table>
<thead>
<tr>
<th>CPU Name</th>
<th>Intel Core i5-6400T</th>
</tr>
</thead>
<tbody>
<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 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>
<tr>
<td>L3 Cache</td>
<td>6 MB I+D on chip per chip</td>
</tr>
<tr>
<td>Other Cache</td>
<td>None</td>
</tr>
<tr>
<td>Memory</td>
<td>64 GB (4 x 16 GB 2Rx8 PC4-2133P-E)</td>
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<tr>
<td>Disk Subsystem</td>
<td>1 x 1000 GB SATA III, 7200 RPM</td>
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<tr>
<td>Other Hardware</td>
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**Score Chart**

<table>
<thead>
<tr>
<th>Test</th>
<th>Score</th>
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<tbody>
<tr>
<td>400.perlbench</td>
<td>38.7</td>
</tr>
<tr>
<td>401.bzip2</td>
<td>21.6</td>
</tr>
<tr>
<td>403.gcc</td>
<td>57.5</td>
</tr>
<tr>
<td>429.mcf</td>
<td>60.8</td>
</tr>
<tr>
<td>445.gobmk</td>
<td>24.6</td>
</tr>
<tr>
<td>456.hmmer</td>
<td>20.0</td>
</tr>
<tr>
<td>458.sjeng</td>
<td>28.4</td>
</tr>
<tr>
<td>462.libquantum</td>
<td>51.8</td>
</tr>
<tr>
<td>464.h264ref</td>
<td>32.0</td>
</tr>
<tr>
<td>471.omnetpp</td>
<td>28.3</td>
</tr>
<tr>
<td>473.astar</td>
<td>28.0</td>
</tr>
<tr>
<td>483.xalancbmk</td>
<td>63.8</td>
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</tbody>
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**SPECint®2006 = 52.9**  
**SPECint_base2006 = 51.3**
Supermicro

SuperWorkstation 5029A-iL
(X11SAE, Intel Core i5-6400T)

SPECint2006 = 52.9
SPECint_base2006 = 51.3

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

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>
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</thead>
<tbody>
<tr>
<td>400.perlbench</td>
<td>280</td>
<td>34.9</td>
<td>282</td>
<td>34.6</td>
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<td>34.6</td>
<td>252</td>
<td>38.7</td>
<td>253</td>
<td>38.6</td>
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<tr>
<td>401.bzip2</td>
<td>449</td>
<td>21.5</td>
<td>449</td>
<td>21.5</td>
<td>449</td>
<td>21.5</td>
<td>444</td>
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<tr>
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<td>37.6</td>
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<td>152</td>
<td>60.1</td>
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<td>60.6</td>
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<td>60.0</td>
<td>149</td>
<td>61.1</td>
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<td>445.gobmk</td>
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<td>427</td>
<td>24.6</td>
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<td>456.hmmer</td>
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<td>72.1</td>
<td>130</td>
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<td>458.sjeng</td>
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<td>422</td>
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<td>462.libquantum</td>
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<td>13.0</td>
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<td>464.h264ref</td>
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</tr>
<tr>
<td>471.omnetpp</td>
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<td>26.5</td>
<td>234</td>
<td>26.7</td>
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<td>26.7</td>
<td>197</td>
<td>31.7</td>
<td>195</td>
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<tr>
<td>473.astar</td>
<td>247</td>
<td>28.4</td>
<td>251</td>
<td>28.0</td>
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<td>28.0</td>
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<td>28.3</td>
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<td>28.5</td>
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<tr>
<td>483.xalancbmk</td>
<td>108</td>
<td>63.8</td>
<td>108</td>
<td>63.9</td>
<td>108</td>
<td>63.7</td>
<td>101</td>
<td>68.2</td>
<td>101</td>
<td>68.2</td>
</tr>
</tbody>
</table>

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

Submit Notes

The config file option 'submit' was used.

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 $$ e3fbb8667b5a28593ceab81e28219e1
running on localhost.localdomain Wed Nov 18 20:45:15 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) i5-6400T 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

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Supermicro
SuperWorkstation 5029A-iL
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Test date: Nov-2015
Test sponsor: Supermicro
Hardware Availability: Sep-2015
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Software Availability: Sep-2015

Platform Notes (Continued)

From /proc/meminfo
MemTotal: 65581704 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 18 20:41

SPEC is set to: /home/cpu2006

filesystem   type  size  used  avail  use% mounted on
/dev/mapper/rhel-home  xfs   850G  5.4G  844G   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. 1.0 11/09/2015
Memory:
  4x Samsung M391A2K43BB1-CPB 16 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,scatter"
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

Continued on next page
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General Notes (Continued)

Transparent Huge Pages enabled with:
echo always > /sys/kernel/mm/transparent_hugepage/enabled

Base Compiler Invocation

C benchmarks:
  icc -m64

C++ benchmarks:
  icpc -m64

Base Portability Flags

400.perlbench: -DSPEC_CPU_LP64 -DSPEC_CPU_LINUX_X64
  401.bzip2: -DSPEC_CPU_LP64
  403.gcc: -DSPEC_CPU_LP64
  429.mcf: -DSPEC_CPU_LP64
  445.gobmk: -DSPEC_CPU_LP64
  456.hmmer: -DSPEC_CPU_LP64
  458.sjeng: -DSPEC_CPU_LP64
  462.libquantum: -DSPEC_CPU_LP64
  464.h264ref: -DSPEC_CPU_LP64
  471.omnetpp: -DSPEC_CPU_LP64
  473.astar: -DSPEC_CPU_LP64
  483.xalancbmk: -DSPEC_CPU_LP64 -DSPEC_CPU_LINUX

Base Optimization Flags

C benchmarks:
  -xCORE-AVX2 -ipo -O3 -no-prec-div -parallel -opt-prefetch -auto-p32

C++ benchmarks:
  -xCORE-AVX2 -ipo -O3 -no-prec-div -opt-prefetch -auto-p32
  -Wl,-z,muldefs -L/sh -lsmartheap64

Base Other Flags

C benchmarks:
  403.gcc: -Dalloca=_alloca
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Peak Compiler Invocation

C benchmarks (except as noted below):

```bash
icc -m64
```

400.perlbench: `icc -m32 -L/opt/intel/compilers_and_libraries_2016/linux/compiler/lib/ia32_lin`

445.gobmk: `icc -m32 -L/opt/intel/compilers_and_libraries_2016/linux/compiler/lib/ia32_lin`

C++ benchmarks (except as noted below):

```bash
icpc -m32 -L/opt/intel/compilers_and_libraries_2016/linux/compiler/lib/ia32_lin
```

473.astar: `icpc -m64`

Peak Portability Flags

400.perlbench: `-D_FILE_OFFSET_BITS=64 -DSPEC_CPU_LINUX_IA32`
401.bzip2: `-DSPEC_CPU_LP64`
403.gcc: `-DSPEC_CPU_LP64`
429.mcf: `-DSPEC_CPU_LP64`
445.gobmk: `-D_FILE_OFFSET_BITS=64`
456.hmmer: `-DSPEC_CPU_LP64`
458.sjeng: `-DSPEC_CPU_LP64`
462.libquantum: `-DSPEC_CPU_LP64 -DSPEC_CPU_LINUX`
464.h264ref: `-DSPEC_CPU_LP64`
471.omnetpp: `-D_FILE_OFFSET_BITS=64`
473.astar: `-DSPEC_CPU_LP64`
483.xalancbmk: `-D_FILE_OFFSET_BITS=64 -DSPEC_CPU_LINUX`

Peak Optimization Flags

C benchmarks:

```bash
400.perlbench: `-xCORE-AVX2(pass 2) -prof-gen:threadsafe(pass 1)
-ip0(pass 2) -O3(pass 2) -no-prec-div(pass 2)
-par-num-threads=1(pass 1) -prof-use(pass 2) -opt-prefetch
-ansi-alias`

401.bzip2: `-xCORE-AVX2(pass 2) -prof-gen:threadsafe(pass 1)
-ip0(pass 2) -O3(pass 2) -no-prec-div
-par-num-threads=1(pass 1) -prof-use(pass 2) -auto-ilp32
-opt-prefetch -ansi-alias`

403.gcc: `-xCORE-AVX2 -ipo -O3 -no-prec-div -inline-calloc
-opt-malloc-options=3 -auto-ilp32`

429.mcf: `-xCORE-AVX2 -ipo -O3 -no-prec-div -parallel
-opt-prefetch -auto-p32`
```

Continued on next page
Peak Optimization Flags (Continued)

445.gobmk: -xCORE-AVX2(pass 2) -prof-gen:threadsafe(pass 1)
-prof-use(pass 2) -par-num-threads=1(pass 1) -ansi-alias

456.hmmer: basepeak = yes

458.sjeng: -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

462.libquantum: basepeak = yes

464.h264ref: basepeak = yes

C++ benchmarks:

471.omnetpp: -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)
-opt-ra-region-strategy=block -ansi-alias
-Wl,-z,muldefs -L/sh -lsmartheap

473.astar: -xCORE-AVX2 -ipo -O3 -no-prec-div -opt-prefetch
-auto-p32 -Wl,-z,muldefs -L/sh -lsmartheap64

483.xalancbmk: -xCORE-AVX2 -ipo -O3 -no-prec-div -opt-prefetch
-ansi-alias -Wl,-z,muldefs -L/sh -lsmartheap

Peak Other Flags

C benchmarks:

403.gcc: -Dalloca=_alloca

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-revG.20141230.00.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-revG.20141230.00.xml
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<tr>
<td>SPECint_base2006 =</td>
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<table>
<thead>
<tr>
<th>CPU2006 license:</th>
<th>Test date:</th>
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<tr>
<td>001176</td>
<td>Nov-2015</td>
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<tr>
<th>Test sponsor:</th>
<th>Hardware Availability:</th>
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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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