## SPEC® CPU2017 Integer Speed Result

**Supermicro**  
SuperServer 5019P-MT (X11SPI-TF, Intel Xeon Silver 4109T)

<table>
<thead>
<tr>
<th>SPECspeed2017_int_base</th>
<th>SPECspeed2017_int_peak</th>
</tr>
</thead>
<tbody>
<tr>
<td>6.66</td>
<td>6.85</td>
</tr>
</tbody>
</table>

**CPU2017 License:** 001176  
**Test Date:** Sep-2018  
**Test Sponsor:** Supermicro  
**Hardware Availability:** Jul-2017  
**Tested by:** Supermicro  
**Software Availability:** Mar-2018

### Threads

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Threads</th>
</tr>
</thead>
<tbody>
<tr>
<td>perlbench_s</td>
<td>8</td>
</tr>
<tr>
<td>gcc_s</td>
<td>8</td>
</tr>
<tr>
<td>mcf_s</td>
<td>8</td>
</tr>
<tr>
<td>omnetpp_s</td>
<td>8</td>
</tr>
<tr>
<td>xalancbmk_s</td>
<td>8</td>
</tr>
<tr>
<td>x264_s</td>
<td>8</td>
</tr>
<tr>
<td>deepsjeng_s</td>
<td>8</td>
</tr>
<tr>
<td>leela_s</td>
<td>8</td>
</tr>
<tr>
<td>exchange2_s</td>
<td>8</td>
</tr>
<tr>
<td>xz_s</td>
<td>8</td>
</tr>
</tbody>
</table>

### SPECspeed2017_int_base (6.66)  
### SPECspeed2017_int_peak (6.85)

### Hardware

<table>
<thead>
<tr>
<th>CPU Name:</th>
<th>Intel Xeon Silver 4109T</th>
</tr>
</thead>
<tbody>
<tr>
<td>Max MHz.:</td>
<td>3000</td>
</tr>
<tr>
<td>Nominal:</td>
<td>2000</td>
</tr>
<tr>
<td>Enabled:</td>
<td>8 cores, 1 chip</td>
</tr>
<tr>
<td>Orderable:</td>
<td>1 chip</td>
</tr>
<tr>
<td>Cache L1:</td>
<td>32 KB I + 32 KB D on chip per core</td>
</tr>
<tr>
<td>L2:</td>
<td>1 MB I-D on chip per core</td>
</tr>
<tr>
<td>L3:</td>
<td>11 MB I+D on chip per chip</td>
</tr>
<tr>
<td>Other:</td>
<td>None</td>
</tr>
<tr>
<td>Memory:</td>
<td>192 GB (6 x 32 GB 2Rx4 PC4-2666V-R, running at 2400)</td>
</tr>
<tr>
<td>Storage:</td>
<td>1 x 200 GB SATA III SSD</td>
</tr>
<tr>
<td>Other:</td>
<td>None</td>
</tr>
</tbody>
</table>

### Software

<table>
<thead>
<tr>
<th>OS:</th>
<th>SUSE Linux Enterprise Server 12 SP3 (x86_64)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Compiler:</td>
<td>C/C++: Version 18.0.2.199 of Intel C/C++</td>
</tr>
<tr>
<td>Compiler for Linux:</td>
<td>Fortran: Version 18.0.2.199 of Intel Fortran</td>
</tr>
<tr>
<td>Firmware:</td>
<td>Supermicro BIOS version 2.1 released Jun-2018</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>64-bit</td>
</tr>
<tr>
<td>Peak Pointers:</td>
<td>32/64-bit</td>
</tr>
<tr>
<td>Other:</td>
<td>jemalloc memory allocator library V5.0.1</td>
</tr>
</tbody>
</table>
### SPEC CPU2017 Integer Speed Result

**Supermicro**
SuperServer 5019P-MT (X11SPI-TF, Intel Xeon Silver 4109T)

| SPECspeed2017_int_base = 6.66 |
| SPECspeed2017_int_peak = 6.85 |

**CPU2017 License:** 001176  
**Test Sponsor:** Supermicro  
**Tested by:** Supermicro  
**Test Date:** Sep-2018  
**Hardware Availability:** Jul-2017  
**Software Availability:** Mar-2018

### Results Table

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Threads</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Seconds</th>
<th>Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>600.perlbench_s</td>
<td>8</td>
<td>362</td>
<td>4.90</td>
<td>367</td>
<td>4.84</td>
<td>361</td>
<td>4.91</td>
</tr>
<tr>
<td>602.gcc_s</td>
<td>8</td>
<td>552</td>
<td>7.21</td>
<td>549</td>
<td>7.25</td>
<td>551</td>
<td>7.23</td>
</tr>
<tr>
<td>605.mcf_s</td>
<td>8</td>
<td>501</td>
<td>9.42</td>
<td>502</td>
<td>9.40</td>
<td>506</td>
<td>9.32</td>
</tr>
<tr>
<td>620.omnetpp_s</td>
<td>8</td>
<td>362</td>
<td>4.51</td>
<td>361</td>
<td>4.52</td>
<td>364</td>
<td>4.49</td>
</tr>
<tr>
<td>623.xalanchmk_s</td>
<td>8</td>
<td>186</td>
<td>7.63</td>
<td>187</td>
<td>7.59</td>
<td>187</td>
<td>7.56</td>
</tr>
<tr>
<td>625.x264_s</td>
<td>8</td>
<td>191</td>
<td>9.22</td>
<td>192</td>
<td>9.21</td>
<td>191</td>
<td>9.23</td>
</tr>
<tr>
<td>631.deepsjeng_s</td>
<td>8</td>
<td>333</td>
<td>4.30</td>
<td>332</td>
<td>4.32</td>
<td>333</td>
<td>4.31</td>
</tr>
<tr>
<td>641.leela_s</td>
<td>8</td>
<td>485</td>
<td>3.52</td>
<td>487</td>
<td>3.50</td>
<td>485</td>
<td>3.52</td>
</tr>
<tr>
<td>648.exchange2_s</td>
<td>8</td>
<td>275</td>
<td>10.7</td>
<td>275</td>
<td>10.7</td>
<td>276</td>
<td>10.7</td>
</tr>
<tr>
<td>657.xz_s</td>
<td>8</td>
<td>616</td>
<td>10.0</td>
<td>616</td>
<td>10.0</td>
<td>616</td>
<td>10.0</td>
</tr>
</tbody>
</table>

### Operating System Notes

Stack size set to unlimited using "ulimit -s unlimited"

### General Notes

Environment variables set by runcpu before the start of the run:

- KMP_AFFINITY = "granularity=fine,scatter"
- LD_LIBRARY_PATH = "/home/cpu2017/lib/ia32:/home/cpu2017/lib/intel64:/home/cpu2017/je5.0.1-32:/home/cpu2017/je5.0.1-64"
- OMP_STACKSIZE = "192M"

Binaries compiled on a system with 1x Intel Core i7-6700K CPU + 32GB RAM memory using Redhat Enterprise Linux 7.5

Transparent Huge Pages enabled by default

Prior to runcpu invocation

Filesystem page cache synced and cleared with:

```
sync; echo 3>/proc/sys/vm/drop_caches
```

Yes: The test sponsor attests, as of date of publication, that CVE-2017-5754 (Meltdown) is mitigated in the system as tested and documented.

Yes: The test sponsor attests, as of date of publication, that CVE-2017-5753 (Spectre variant 1) is mitigated in the system as tested and documented.

Yes: The test sponsor attests, as of date of publication, that CVE-2017-5715 (Spectre variant 2) is mitigated in the system as tested and documented.

Supermicro SuperServer 5019P-MT (X11SPI-TF, Intel Xeon Silver 4109T)

SPEC CPU2017 Integer Speed Result
Copyright 2017-2018 Standard Performance Evaluation Corporation

CPU2017 License: 001176
Test Sponsor: Supermicro
Test Date: Sep-2018
Tested by: Supermicro

BIOS Settings:
Hyper-Threading [ALL] = Disable
LLC dead line alloc = Disable
Patrol Scrub = Disable

Sysinfo program /home/cpu2017/bin/sysinfo
Rev: r5974 of 2018-05-19 9bcde8f2999c33d61f64985e45859ea9
running on linux-cyyj Tue Sep 25 11:03:24 2018

SUT (System Under Test) info as seen by some common utilities.
For more information on this section, see
https://www.spec.org/cpu2017/Docs/config.html#sysinfo

From /proc/cpuinfo

model name : Intel(R) Xeon(R) Silver 4109T CPU @ 2.00GHz
  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 caution.)
cpu cores : 8
siblings : 8
physical 0: cores 0 1 2 3 4 5 6 7

From lscpu:
Architecture:         x86_64
CPU op-mode(s):        32-bit, 64-bit
Byte Order:            Little Endian
CPU(s):                8
On-line CPU(s) list:   0-7
Thread(s) per core:    1
Core(s) per socket:    8
Socket(s):             1
NUMA node(s):          1
Vendor ID:             GenuineIntel
CPU family:            6
Model:                 85
Model name:            Intel(R) Xeon(R) Silver 4109T CPU @ 2.00GHz
Stepping:              4
CPU MHz:               1999.991
BogoMIPS:              3999.98
Virtualization:       VT-x
L1d cache:             32K
L1i cache:             32K
L2 cache:              1024K
L3 cache:              11264K
NUMA node0 CPU(s):     0-7
Flags:                 fpu vme de pse tsc msr pae mce cx8 apic sep mtrr pge mca cmov
                       pat pse36 clflush dts acpi mmx fxsr sse sse2 ss ht tm pbe syscall nx pdpe1gb rdtscp

(Continued on next page)
Supermicro
SuperServer 5019P-MT (X11SPi-TF, Intel Xeon Silver 4109T)
**Supermicro**  
SuperServer 5019P-MT (X11SPI-TF, Intel Xeon Silver 4109T)

<table>
<thead>
<tr>
<th>SPECspeed2017_int_base</th>
<th>SPECspeed2017_int_peak</th>
</tr>
</thead>
<tbody>
<tr>
<td>6.66</td>
<td>6.85</td>
</tr>
</tbody>
</table>

**CPU2017 License:** 001176  
**Test Date:** Sep-2018  
**Test Sponsor:** Supermicro  
**Hardware Availability:** Jul-2017  
**Tested by:** Supermicro  
**Software Availability:** Mar-2018

### Platform Notes (Continued)

Kernel self-reported vulnerability status:

- CVE-2017-5754 (Meltdown): Mitigation: PTI
- CVE-2017-5753 (Spectre variant 1): Mitigation: Barriers
- CVE-2017-5715 (Spectre variant 2): Mitigation: IBRS+IBPB

run-level 3 Sep 25 11:01

SPEC is set to: /home/cpu2017

<table>
<thead>
<tr>
<th>Filesystem</th>
<th>Type</th>
<th>Size</th>
<th>Used</th>
<th>Avail</th>
<th>Use%</th>
<th>Mounted on</th>
</tr>
</thead>
<tbody>
<tr>
<td>/dev/sda3</td>
<td>xfs</td>
<td>145G</td>
<td>32G</td>
<td>113G</td>
<td>23%</td>
<td>/home</td>
</tr>
</tbody>
</table>

Additional information from dmidecode follows. 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. 2.1 06/14/2018
- Memory:
  - 2x NO DIMM NO DIMM
  - 6x Samsung M393A4K40BB2-CTD 32 GB 2 rank 2666, configured at 2400

(End of data from sysinfo program)

### Compiler Version Notes

```
CC  600.perlbench_s(base) 602.gcc_s(base) 605.mcf_s(base) 625.x264_s(base, peak) 657.xz_s(base)
```

```
icc (ICC) 18.0.2 20180210
Copyright (C) 1985-2018 Intel Corporation. All rights reserved.
```

```
CC  600.perlbench_s(peak) 602.gcc_s(peak) 605.mcf_s(peak) 657.xz_s(peak)
iccc (ICC) 18.0.2 20180210
Copyright (C) 1985-2018 Intel Corporation. All rights reserved.
```

```
CXXC 620.omnetpp_s(base) 623.xalancbmk_s(base) 631.deepsjeng_s(base) 641.leela_s(base)
icpc (ICC) 18.0.2 20180210
Copyright (C) 1985-2018 Intel Corporation. All rights reserved.
```

(Continued on next page)
SPEC CPU2017 Integer Speed Result

Supermicro
SuperServer 5019P-MT (X11SPI-TF, Intel Xeon Silver 4109T)

| SPECspeed2017_int_base = 6.66 |
| SPECspeed2017_int_peak = 6.85 |

CPU2017 License: 001176
Test Sponsor: Supermicro
Tested by: Supermicro

---

Compiler Version Notes (Continued)

==============================================================================
CXXC 620.omnetpp_s(peak) 623.xalancbmk_s(peak) 631.deepsjeng_s(peak)
641.leela_s(peak)

icpc (ICC) 18.0.2 20180210
Copyright (C) 1985-2018 Intel Corporation. All rights reserved.

==============================================================================
FC 648.exchange2_s(base, peak)

ifort (IFORT) 18.0.2 20180210
Copyright (C) 1985-2018 Intel Corporation. All rights reserved.

---

Base Compiler Invocation

C benchmarks:
icc -m64 -std=c11

C++ benchmarks:
icpc -m64

Fortran benchmarks:
ifort -m64

---

Base Portability Flags

600.perlbench_s: -DSPEC_LP64 -DSPEC_LINUX_X64
602.gcc_s: -DSPEC_LP64
605.mcf_s: -DSPEC_LP64
620.omnetpp_s: -DSPEC_LP64
623.xalancbmk_s: -DSPEC_LP64 -DSPEC_LINUX
625.x264_s: -DSPEC_LP64
631.deepsjeng_s: -DSPEC_LP64
641.leela_s: -DSPEC_LP64
648.exchange2_s: -DSPEC_LP64
657.xz_s: -DSPEC_LP64
**Supermicro**
SuperServer 5019P-MT (X11SPi-TF, Intel Xeon Silver 4109T)

<table>
<thead>
<tr>
<th>CPU2017 License</th>
<th>001176</th>
</tr>
</thead>
<tbody>
<tr>
<td>Test Sponsor</td>
<td>Supermicro</td>
</tr>
<tr>
<td>Tested by</td>
<td>Supermicro</td>
</tr>
<tr>
<td>SPECspeed2017_int_base</td>
<td>6.66</td>
</tr>
<tr>
<td>SPECspeed2017_int_peak</td>
<td>6.85</td>
</tr>
<tr>
<td>Test Date</td>
<td>Sep-2018</td>
</tr>
<tr>
<td>Hardware Availability</td>
<td>Jul-2017</td>
</tr>
<tr>
<td>Software Availability</td>
<td>Mar-2018</td>
</tr>
</tbody>
</table>

### Base Optimization Flags

C benchmarks:
- `-Wl,-z,muldefs -xCORE-AVX512 -ipo -O3 -no-prec-div`
- `-qopt-mem-layout-trans=3 -qopenmp -DSPEC_OPENMP`
- `-L/usr/local/je5.0.1-64/lib -ljemalloc`

C++ benchmarks:
- `-Wl,-z,muldefs -xCORE-AVX512 -ipo -O3 -no-prec-div`
- `-qopt-mem-layout-trans=3 -L/usr/local/je5.0.1-64/lib -ljemalloc`

Fortran benchmarks:
- `-Wl,-z,muldefs -xCORE-AVX512 -ipo -O3 -no-prec-div`
- `-qopt-mem-layout-trans=3 -nostandard-realloc-lhs`
- `-L/usr/local/je5.0.1-64/lib -ljemalloc`

### Peak Compiler Invocation

C benchmarks:
- `icc -m64 -std=c11`

C++ benchmarks (except as noted below):
- `icpc -m64`

`623.xalancbmk_s: icpc -m32 -L/home/prasadj/specdev/IC18u2_Internal/lin_18_0_20180210/compiler/lib/ia32_lin`

Fortran benchmarks:
- `ifort -m64`

### Peak Portability Flags

```
600.perlbench_s: -DSPEC_LP64 -DSPEC_LINUX_X64
602.gcc_s: -DSPEC_LP64
605.mcf_s: -DSPEC_LP64
620.omnetpp_s: -DSPEC_LP64
623.xalancbmk_s: -D_FILE_OFFSET_BITS=64 -DSPEC_LINUX
625.x264_s: -DSPEC_LP64
631.deepsjeng_s: -DSPEC_LP64
641.leela_s: -DSPEC_LP64
648.exchange2_s: -DSPEC_LP64
657.xz_s: -DSPEC_LP64
```
## SPEC CPU2017 Integer Speed Result

**Supermicro**

SuperServer 5019P-MT (X11SPi-TF, Intel Xeon Silver 4109T)

<table>
<thead>
<tr>
<th>SPECspeed2017_int_base</th>
<th>SPECspeed2017_int_peak</th>
</tr>
</thead>
<tbody>
<tr>
<td>6.66</td>
<td>6.85</td>
</tr>
</tbody>
</table>

**CPU2017 License:** 001176  
**Test Date:** Sep-2018  
**Hardware Availability:** Jul-2017  
**Test Sponsor:** Supermicro  
**Tested by:** Supermicro  
**Software Availability:** Mar-2018

### Peak Optimization Flags

**C benchmarks:**

- **600.perlbench_s:** `-Wl,-z,muldefs -prof-gen(pass 1) -prof-use(pass 2) -O2 -xCORE-AVX512 -qopt-prefetch -ipo -O3 -qopt-mem-layout-trans=3 -no-prec-div -DSPEC_SUPPRESS_OPENMP -qopenmp -DSPEC_OPENMP -fno-strict-overflow -L/usr/local/je5.0.1-64/lib -ljemalloc`

- **602.gcc_s:** `-Wl,-z,muldefs -prof-gen(pass 1) -prof-use(pass 2) -O2 -xCORE-AVX512 -qopt-prefetch -ipo -O3 -qopt-mem-layout-trans=3 -no-prec-div -DSPEC_SUPPRESS_OPENMP -qopenmp -DSPEC_OPENMP -L/usr/local/je5.0.1-64/lib -ljemalloc`

- **605.mcf_s:** `basepeak = yes`

- **625.x264_s:** `basepeak = yes`

- **657.xz_s:** `Same as 602.gcc_s`

**C++ benchmarks:**

- **620.omnetpp_s:** `basepeak = yes`

- **623.xalancbmk_s:** `-Wl,-z,muldefs -prof-gen(pass 1) -prof-use(pass 2) -ipo -xCORE-AVX512 -O3 -no-prec-div -qopt-prefetch -qopt-mem-layout-trans=3 -DSPEC_SUPPRESS_OPENMP -qopenmp -DSPEC_OPENMP -L/usr/local/je5.0.1-32/lib -ljemalloc`

- **631.deepsjeng_s:** `basepeak = yes`

- **641.leela_s:** `basepeak = yes`

**Fortran benchmarks:**

- `-Wl,-z,muldefs -xCORE-AVX512 -ipo -O3 -no-prec-div -qopt-prefetch -qopt-mem-layout-trans=3 -nostandard-realloc-lhs -L/usr/local/je5.0.1-64/lib -ljemalloc`

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/cpu2017/flags/Supermicro Platform Settings V1.2 SKL revD.xml
**Supermicro**
SuperServer 5019P-MT (X11SPi-TF, Intel Xeon Silver 4109T)  

<table>
<thead>
<tr>
<th>SPECspeed2017_int_base</th>
<th>6.66</th>
</tr>
</thead>
<tbody>
<tr>
<td>SPECspeed2017_int_peak</td>
<td>6.85</td>
</tr>
</tbody>
</table>

- **CPU2017 License:** 001176
- **Test Sponsor:** Supermicro
- **Tested by:** Supermicro
- **Test Date:** Sep-2018
- **Hardware Availability:** Jul-2017
- **Software Availability:** Mar-2018

SPEC is a registered trademark of the Standard Performance Evaluation Corporation. All other brand and product names appearing in this result are trademarks or registered trademarks of their respective holders.

For questions about this result, please contact the tester. For other inquiries, please contact info@spec.org.

Tested with SPEC CPU2017 v1.0.5 on 2018-09-24 23:03:23-0400.
Originally published on 2018-10-16.