## SPEC CPU®2017 Integer Speed Result

**Supermicro**  
SuperWorkstation 5039C-I  
(X11SCL-F, Intel Xeon E-2226G)  

**SPECspeed®2017_int_base = 10.8**  
**SPECspeed®2017_int_peak = 11.0**

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

### Hardware

<table>
<thead>
<tr>
<th>SPECspeed®2017_int_peak</th>
<th>SPECspeed®2017_int_base</th>
</tr>
</thead>
<tbody>
<tr>
<td>20.3</td>
<td>10.8</td>
</tr>
</tbody>
</table>

### Software

#### OS:
SUSE Linux Enterprise Server 12 SP4 (x86_64)  
Kernel 4.12.14-94.41-default

#### Compiler:
C/C++: Version 19.0.4.227 of Intel C/C++ Compiler for Linux;  
Fortran: Version 19.0.4.227 of Intel Fortran Compiler for Linux

#### Parallel:
Yes

#### Firmware:
Version 1.0b released May-2019

#### File System:
xfs

#### System State:
Run level 3 (multi-user)

#### Base Pointers:
64-bit

#### Peak Pointers:
64-bit

#### Other:
jemalloc memory allocator V5.0.1

#### Power Management:
--

---

### Test Results

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Threads</th>
<th>SPECspeed®2017_int_base</th>
<th>SPECspeed®2017_int_peak</th>
</tr>
</thead>
<tbody>
<tr>
<td>perlbench_s</td>
<td>6</td>
<td>9.10</td>
<td>12.0</td>
</tr>
<tr>
<td>gcc_s</td>
<td>6</td>
<td>12.3</td>
<td>15.7</td>
</tr>
<tr>
<td>mcf_s</td>
<td>6</td>
<td>7.00</td>
<td></td>
</tr>
<tr>
<td>omnetpp_s</td>
<td>6</td>
<td></td>
<td></td>
</tr>
<tr>
<td>xalancbmk_s</td>
<td>6</td>
<td>15.1</td>
<td>19.1</td>
</tr>
<tr>
<td>x264_s</td>
<td>6</td>
<td></td>
<td>17.4</td>
</tr>
<tr>
<td>deepsjeng_s</td>
<td>6</td>
<td>6.50</td>
<td>6.50</td>
</tr>
<tr>
<td>leela_s</td>
<td>6</td>
<td>5.57</td>
<td>5.57</td>
</tr>
<tr>
<td>exchange2_s</td>
<td>6</td>
<td>11.0</td>
<td>20.3</td>
</tr>
<tr>
<td>xz_s</td>
<td>6</td>
<td>11.3</td>
<td></td>
</tr>
</tbody>
</table>

---

### Hardware Details

- **CPU Name:** Intel Xeon E-2226G  
- **Max MHz:** 4700  
- **Nominal:** 3400  
- **Enabled:** 6 cores, 1 chip  
- **Orderable:** 1 chip  
- **Cache L1:** 32 KB I + 32 KB D on chip per core  
- **L2:** 256 KB I+D on chip per core  
- **L3:** 12 MB I+D on chip per chip  
- **Memory:** 128 GB (4 x 32 GB 2Rx8 PC4-2666V-E)  
- **Storage:** 1 x 4 TB SATA III 7200 RPM  
- **Other:** None

---

### Test Details

- **Hardware Availability:** May-2019  
- **Software Availability:** May-2019  
- **Test Date:** Oct-2019  
- **Test Sponsor:** Supermicro  
- **CPU2017 License:** 001176  
- **Tested by:** Supermicro  

---

### Benchmarks

- **600.perlbench_s**  
- **602.gcc_s**  
- **605.mcf_s**  
- **620.omnetpp_s**  
- **623.xalancbmk_s**  
- **625.x264_s**  
- **631.deepsjeng_s**  
- **641.leela_s**  
- **648.exchange2_s**  
- **657.xz_s**
Supermicro
SuperWorkstation 5039C-I
(X11SCL-F, Intel Xeon E-2226G)

**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>6</td>
<td>231</td>
<td>7.70</td>
<td>230</td>
<td>7.73</td>
<td>220</td>
<td>7.70</td>
</tr>
<tr>
<td>602.gcc_s</td>
<td>6</td>
<td>332</td>
<td>12.0</td>
<td>332</td>
<td>12.0</td>
<td>332</td>
<td>12.0</td>
</tr>
<tr>
<td>605.mcf_s</td>
<td>6</td>
<td>301</td>
<td>15.7</td>
<td>301</td>
<td>15.7</td>
<td>301</td>
<td>15.7</td>
</tr>
<tr>
<td>620.omnetpp_s</td>
<td>6</td>
<td>233</td>
<td>7.00</td>
<td>233</td>
<td>7.00</td>
<td>233</td>
<td>7.00</td>
</tr>
<tr>
<td>623.xalanchmk_s</td>
<td>6</td>
<td>93.6</td>
<td>15.1</td>
<td>93.5</td>
<td>15.2</td>
<td>93.5</td>
<td>15.1</td>
</tr>
<tr>
<td>625.x264_s</td>
<td>6</td>
<td>101</td>
<td>17.4</td>
<td>101</td>
<td>17.4</td>
<td>101</td>
<td>17.4</td>
</tr>
<tr>
<td>631.deepsjeng_s</td>
<td>6</td>
<td>220</td>
<td>6.50</td>
<td>220</td>
<td>6.50</td>
<td>220</td>
<td>6.50</td>
</tr>
<tr>
<td>641.leela_s</td>
<td>6</td>
<td>306</td>
<td>5.57</td>
<td>306</td>
<td>5.57</td>
<td>306</td>
<td>5.57</td>
</tr>
<tr>
<td>648.exchange2_s</td>
<td>6</td>
<td>145</td>
<td>20.3</td>
<td>145</td>
<td>20.3</td>
<td>145</td>
<td>20.3</td>
</tr>
<tr>
<td>657.xz_s</td>
<td>6</td>
<td>559</td>
<td>11.1</td>
<td>560</td>
<td>11.0</td>
<td>560</td>
<td>11.0</td>
</tr>
</tbody>
</table>

**Operating System Notes**
Stack size set to unlimited using "ulimit -s unlimited"

**Environment Variables Notes**
Environment variables set by runcpu before the start of the run:
- KMP_AFFINITY = "granularity=fine,scatter"
- LD_LIBRARY_PATH = "/home/cpu2017/lib/intel64:/home/cpu2017/je5.0.1-64"
- OMP_STACKSIZE = "192M"

**General Notes**
Binaries compiled on a system with 1x Intel Core i9-7900X 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.
jemalloc, a general purpose malloc implementation built with the RedHat Enterprise 7.5, and the system compiler gcc 4.8.5

(Continued on next page)
## SPEC CPU®2017 Integer Speed Result

**Supermicro**

SuperWorkstation 5039C-I  
(X11SCL-F, Intel Xeon E-2226G)

<table>
<thead>
<tr>
<th>SPECspeed®2017_int_base</th>
<th>SPECspeed®2017_int_peak</th>
</tr>
</thead>
<tbody>
<tr>
<td>10.8</td>
<td>11.0</td>
</tr>
</tbody>
</table>

**CPU2017 License:** 001176  
**Test Date:** Oct-2019

**Test Sponsor:** Supermicro  
**Hardware Availability:** May-2019

**Tested by:** Supermicro  
**Software Availability:** May-2019

---

### General Notes (Continued)


---

### Platform Notes

Sysinfo program /home/cpu2017/bin/sysinfo  
Rev: r6365 of 2019-08-21 295195f888a3d7edble6e46a485a0011  
running on linux-cq1s Thu Oct 31 10:05:12 2019

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

```plaintext
model name : Intel(R) Xeon(R) E-2226G CPU @ 3.40GHz
 1 "physical id"s (chips)
 6 "processors"
cores, siblings (Caution: counting these is hw and system dependant. The following excerpts from /proc/cpuinfo might not be reliable. Use with caution.)
cpu cores : 6
siblings : 6
  physical 0: cores 0 1 2 3 4 5
```

From lscpu:

```plaintext
Architecture:       x86_64
CPU op-mode(s):     32-bit, 64-bit
Byte Order:         Little Endian
CPU(s):             6
On-line CPU(s) list: 0-5
Thread(s) per core: 1
Core(s) per socket: 6
Socket(s):          1
NUMA node(s):       1
Vendor ID:          GenuineIntel
CPU family:         6
Model:              158
Model name:         Intel(R) Xeon(R) E-2226G CPU @ 3.40GHz
Stepping:           10
CPU MHz:            3400.000
CPU max MHz:        4700.0000
CPU min MHz:        800.0000
BogoMIPS:           6816.00
Virtualization:     VT-x
L1d cache:          32K
L1i cache:          32K
L2 cache:           256K
```

(Continued on next page)
SPEC CPU®2017 Integer Speed Result

Copyright 2017-2020 Standard Performance Evaluation Corporation

Supermicro
SuperWorkstation 5039C-I
(X11SCL-F, Intel Xeon E-2226G)

Copyright 2017-2020 Standard Performance Evaluation Corporation

SPECspeed®2017_int_base = 10.8
SPECspeed®2017_int_peak = 11.0

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

Test Date: Oct-2019
Hardware Availability: May-2019
Software Availability: May-2019

Platform Notes (Continued)

L3 cache: 12288K
NUMA node0 CPU(s): 0-5
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
lm constant_tsc art arch_perfmon pebs bts rep_good nopl xtopology nonstop_tsc cpuid
aperfmpref perf tsc_known_freq pni pclmulqdq dtes64 monitor ds_cpl vmx smx est tm2 ssse3
sdbg fma cx16 xtpr pdcm pcid sse4_1 sse4_2 x2apic movbe popcnt tsc_deadline_timer
aes xsave avx f16c rdrand lahf_lm abm 3dnowprefetch cpuid_fault epb invpcid_single
pti ssbd ibrs ibpb tpr_shadow vnmi flexpriority ept vpid fsgsbase tsc_adjust
bmi1 hle avx2 smep bmi2 erms invpcid rdtscp rdseed adx smap clflushopt intel_pt
xsaves dflush xtpr xgetbv1 xsaves dtherm ida arat pln pts hwp hwp_notify hwp_act_window
hwp_epp flush llf

From /proc/cpuinfo cache data

cache size: 12288 KB

From numactl --hardware WARNING: a numactl 'node' might or might not correspond to a
physical chip.

available: 1 nodes (0)
node 0 cpus: 0 1 2 3 4 5
node 0 size: 128551 MB
node 0 free: 110400 MB
node distances:

node 0
0: 10

From /proc/meminfo

MemTotal: 131636340 kB
HugePages_Total: 0
Hugepagesize: 2048 KB

/usr/bin/lsb_release -d

SUSE Linux Enterprise Server 12 SP4

From /etc/*release*/etc/*version*

SuSE-release:

SUSE Linux Enterprise Server 12 (x86_64)
VERSION = 12
PATCHLEVEL = 4

# This file is deprecated and will be removed in a future service pack or release.
# Please check /etc/os-release for details about this release.

os-release:

NAME="SLES"
VERSION="12-SP4"
VERSION_ID="12.4"
PRETTY_NAME="SUSE Linux Enterprise Server 12 SP4"
ID="sles"

(Continued on next page)
Supermicro
SuperWorkstation 5039C-I
(X11SCL-F, Intel Xeon E-2226G)

CPU2017 License: 001176
Test Sponsor: Supermicro
Test Date: Oct-2019

Tested by: Supermicro
Hardware Availability: May-2019

Software Availability: May-2019

SPECspeed®2017_int_base = 10.8
SPECspeed®2017_int_peak = 11.0

Platform Notes (Continued)

ANSI_COLOR="0;32"
CPE_NAME="cpe:/o:suse:sles:12:sp4"

uname -a:
x86_64 x86_64 x86_64 GNU/Linux

Kernel self-reported vulnerability status:

CVE-2018-3620 (L1 Terminal Fault): Mitigation: PTE Inversion; VMX: conditional
cache flushes, SMT disabled
Microarchitectural Data Sampling: No status reported
CVE-2017-5754 (Meltdown): Mitigation: PTI
CVE-2018-3639 (Speculative Store Bypass): Mitigation: Speculative Store Bypass disabled
via prctl and seccomp
CVE-2017-5753 (Spectre variant 1): Mitigation: __user pointer sanitization
CVE-2017-5715 (Spectre variant 2): Mitigation: Indirect Branch Restricted
Speculation, IBPB, IBRS_FW
run-level 3 Oct 30 19:28

SPEC is set to: /home/cpu2017
From /sys/devices/virtual/dmi/id
BIOS: American Megatrends Inc. 1.0b 05/16/2019
Vendor: Supermicro
Product: Super Server
Serial: 0123456789

Memory:
4x Samsung M391A4G43MB1-CTD 32 GB 2 rank 2667

(End of data from sysinfo program)

Compiler Version Notes

-----------------------------
C | 600.perlbench_s(base, peak) 602.gcc_s(base, peak) 605.mcf_s(base, peak)
   | 625.x264_s(base, peak) 657.xz_s(base, peak)
-----------------------------

(Continued on next page)
Supermicro
SuperWorkstation 5039C-I (X11SCL-F, Intel Xeon E-2226G)

<table>
<thead>
<tr>
<th>CPU2017 License: 001176</th>
<th>Test Sponsor: Supermicro</th>
</tr>
</thead>
<tbody>
<tr>
<td>Test Date: Oct-2019</td>
<td>Tested by: Supermicro</td>
</tr>
<tr>
<td>Hardware Availability: May-2019</td>
<td></td>
</tr>
<tr>
<td>Software Availability: May-2019</td>
<td></td>
</tr>
</tbody>
</table>

**Compiler Version Notes (Continued)**

Intel(R) C Intel(R) 64 Compiler for applications running on Intel(R) 64,
Version 19.0.4.227 Build 20190416
Copyright (C) 1985-2019 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

(Continued on next page)
Supermicro
SuperWorkstation 5039C-I
(X11SCL-F, Intel Xeon E-2226G)

SPECspeed®2017_int_base = 10.8
SPECspeed®2017_int_peak = 11.0

CPU2017 License: 001176
Test Sponsor: Supermicro
Test Date: Oct-2019
Tested by: Supermicro
Hardware Availability: May-2019
Software Availability: May-2019

Base Portability Flags (Continued)
648.exchange2_s: -DSPEC_LP64
657.xz_s: -DSPEC_LP64

Base Optimization Flags
C benchmarks:
-Wl,-z,muldefs, -xCORE-AVX2, -ipo, -O3, -no-prec-div
-qopt-mem-layout-trans=4, -qopenmp, -DSPEC_OPENMP
-L/usr/local/je5.0.1-64/lib, -ljemalloc

C++ benchmarks:
-Wl,-z,muldefs, -xCORE-AVX2, -ipo, -O3, -no-prec-div
-qopt-mem-layout-trans=4
-L/usr/local/IntelCompiler19/compilers_and_libraries_2019.4.227/linux/compiler/lib/intel64
-lqkmalloc

Fortran benchmarks:
-xCORE-AVX2, -ipo, -O3, -no-prec-div, -qopt-mem-layout-trans=4
-nostandard-realloc-lhs

Peak Compiler Invocation
C benchmarks:
icc -m64, -std=c11

C++ benchmarks:
icpc -m64

Fortran benchmarks:
ifort -m64

Peak Portability Flags
Same as Base Portability Flags
Supermicro
SuperWorkstation 5039C-I
(X11SCL-F, Intel Xeon E-2226G)

SPEC speed

\[ \text{SPECspeed}^{\text{2017\_int\_peak}} = 11.0 \]
\[ \text{SPECspeed}^{\text{2017\_int\_base}} = 10.8 \]

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

**Test Date:** Oct-2019
**Hardware Availability:** May-2019
**Software Availability:** May-2019

**Peak Optimization Flags**

**C benchmarks:**

600.perlbench_s: -Wl,-z,muldefs -prof-gen(pass 1) -prof-use(pass 2) -O2
-xCORE-AVX2 -qopt-mem-layout-trans=4 -ipo -O3
-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-AVX2 -qopt-mem-layout-trans=4 -ipo -O3
-no-prec-div -DSPEC_SUPPRESS_OPENMP
-L/usr/local/je5.0.1-64/lib -ljemalloc

605.mcf_s: basepeak = yes

625.x264_s: -Wl,-z,muldefs -xCORE-AVX2 -ipo -O3 -no-prec-div
-qopt-mem-layout-trans=4 -qopenmp -DSPEC_OPENMP
-L/usr/local/je5.0.1-64/lib -ljemalloc

631.deepsjeng_s: Same as 623.xalancbmk_s

641.leela_s: Same as 623.xalancbmk_s

**C++ benchmarks:**

620.omnetpp_s: basepeak = yes

623.xalancbmk_s: -Wl,-z,muldefs -xCORE-AVX2 -ipo -O3 -no-prec-div
-qopt-mem-layout-trans=4
-L/usr/local/IntelCompiler19/compilers_and_libraries_2019.4.227/linux/compiler/lib/intel64
-lqkmalloc

631.deepsjeng_s: Same as 623.xalancbmk_s

641.leela_s: Same as 623.xalancbmk_s

**Fortran benchmarks:**

648.exchange2_s: basepeak = yes

The flags files that were used to format this result can be browsed at
SPEC CPU®2017 Integer Speed Result

Supermicro
SuperWorkstation 5039C-I
(X11SCL-F, Intel Xeon E-2226G)

SPECspeed®2017_int_base = 10.8
SPECspeed®2017_int_peak = 11.0

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

Test Date: Oct-2019
Hardware Availability: May-2019
Software Availability: May-2019

You can also download the XML flags sources by saving the following links:

SPEC CPU and SPECspeed are registered trademarks 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 CPU®2017 v1.1.0 on 2019-10-30 22:05:12-0400.
Report generated on 2020-01-08 12:06:15 by CPU2017 PDF formatter v6255.
Originally published on 2020-01-07.