## SPEC® CPU2017 Floating Point Rate Result

**Supermicro**  
SuperServer 5019C-WR (X11SCW-F, Intel Xeon E-2186G)

<table>
<thead>
<tr>
<th>SPECrate2017_fp_base</th>
<th>38.1</th>
</tr>
</thead>
<tbody>
<tr>
<td>SPECrate2017_fp_peak</td>
<td>38.6</td>
</tr>
</tbody>
</table>

**CPU2017 License:** 001176  
**Test Sponsor:** Supermicro  
**Tested by:** Supermicro  
**Test Date:** Oct-2018  
**Hardware Availability:** Nov-2018  
**Software Availability:** Mar-2018

### Hardware

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Copies</th>
<th>SPECrate2017_fp_base (38.1)</th>
<th>SPECrate2017_fp_peak (38.6)</th>
</tr>
</thead>
<tbody>
<tr>
<td>503.bwaves_r</td>
<td>12</td>
<td>70.9</td>
<td>70.9</td>
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<tr>
<td>507.cactuBSSN_r</td>
<td>12</td>
<td>39.3</td>
<td>39.3</td>
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<tr>
<td>508.namd_r</td>
<td>12</td>
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</tr>
<tr>
<td>510.parest_r</td>
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<tr>
<td>511.povray_r</td>
<td>12</td>
<td>56.1</td>
<td>64.1</td>
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<tr>
<td>519.lbm_r</td>
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<td>17.1</td>
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<tr>
<td>521.wrf_r</td>
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<td>32.4</td>
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<td>526.blender_r</td>
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<td>51.4</td>
<td>51.4</td>
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<td>527.cam4_r</td>
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<td>538.imagick_r</td>
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<td>82.9</td>
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</tr>
<tr>
<td>554.roms_r</td>
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### Software

<table>
<thead>
<tr>
<th>OS:</th>
<th>SUSE Linux Enterprise Server 12 SP3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kernel:</td>
<td>4.4.114-94.11-default</td>
</tr>
<tr>
<td>Compiler:</td>
<td>C/C++: Version 18.0.2.199 of Intel C/C++</td>
</tr>
<tr>
<td>Fortran:</td>
<td>Version 18.0.2.199 of Intel Fortran</td>
</tr>
<tr>
<td>File System:</td>
<td>xfs</td>
</tr>
<tr>
<td>System State:</td>
<td>Run level 3 (multi-user)</td>
</tr>
</tbody>
</table>

**CPU Name:** Intel Xeon E-2186G  
**Max MHz.:** 4700  
**Nominal:** 3800  
**Enabled:** 6 cores, 1 chip, 2 threads/core  
**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  
**Other:** None  
**Memory:** 64 GB (4 x 16 GB 2Rx8 PC4-2666V-E)  
**Storage:** 1 x 4 TB SATA III 7200 RPM  
**Other:** None  
**Parallel:** No  
**Firmware:** Supermicro BIOS version 1.0 released Oct-2018  
**Base Pointers:** 64-bit  
**Peak Pointers:** 64-bit  
**Other:** None
SPEC CPU2017 Floating Point Rate Result

Supermicro
SuperServer 5019C-WR (X11SCW-F, Intel Xeon E-2186G)

Copyright 2017-2018 Standard Performance Evaluation Corporation

SPECrate2017_fp_base = 38.1
SPECrate2017_fp_peak = 38.6

Results Table

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Copies</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Seconds</th>
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<th>Seconds</th>
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<td>12.6</td>
<td>1516</td>
</tr>
</tbody>
</table>

SPECrate2017_fp_base = 38.1
SPECrate2017_fp_peak = 38.6

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

Submit Notes

The taskset mechanism was used to bind copies to processors. The config file option 'submit' was used to generate taskset commands to bind each copy to a specific processor.
For details, please see the config file.

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:
LD_LIBRARY_PATH = "/home/cpu2017/lib/ia32:/home/cpu2017/lib/intel64:/home/cpu2017/je5.0.1-32:/home/cpu2017/je5.0.1-64"

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)
### SPEC CPU2017 Floating Point Rate Result

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<th>Supermicro SuperServer 5019C-WR (X11SCW-F, Intel Xeon E-2186G)</th>
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<tr>
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<th>001176</th>
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<td>Supermicro</td>
</tr>
<tr>
<td>Tested by</td>
<td>Supermicro</td>
</tr>
</tbody>
</table>

#### General Notes (Continued)

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.

#### Platform Notes

Sysinfo program /home/cpu2017/bin/sysinfo
Rev: r5974 of 2018-05-19 9bcde8f2999c33d61f64985e45859ea9
running on linux-6ojl Thu Oct 25 00:49:36 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](https://www.spec.org/cpu2017/Docs/config.html#sysinfo)

From /proc/cpuinfo

```
model name : Intel(R) Xeon(R) E-2186G CPU @ 3.80GHz
  1 "physical id"s (chips)
  12 "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 : 6
siblings : 12
physical 0: cores 0 1 2 3 4 5
```

From lscpu:

```
Architecture:         x86_64
CPU op-mode(s):       32-bit, 64-bit
Byte Order:           Little Endian
CPU(s):               12
On-line CPU(s) list:  0-11
Thread(s) per core:   2
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-2186G CPU @ 3.80GHz
Stepping:             10
CPU MHz:              4570.982
CPU max MHz:          4700.0000
CPU min MHz:          800.0000
BogoMIPS:             7583.95
Virtualization:       VT-x
L1d cache:            32K
L1i cache:            32K
```

(Continued on next page)
Supermicro
SuperServer 5019C-WR (X11SCW-F, Intel Xeon E-2186G)

SPEC2017 License: 001176
Test Sponsor: Supermicro
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CPU2017 FP Peak Result

SPECrate2017_fp_base = 38.1
SPECrate2017_fp_peak = 38.6

Test Date: Oct-2018
Hardware Availability: Nov-2018
Software Availability: Mar-2018

Platform Notes (Continued)

L2 cache: 256K
L3 cache: 12288K
NUMA node0 CPU(s): 0-11
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
  aperfmperf eagerfpu 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 ida arat epb invpcid_single pmlns
  dtherm hwp_notify hwp_act_window hwp_epp intel_pt rsb_ctxsw spec_ctrl ret Timeline
  kaiser tpr_shadow vnmi flexpriority ept vpid fsgsbase tsc_adjust bmi1 hle avx2 smep
  bmi2 erms invpcid rtm rtms rdseed adx smap clflushopt xsaves opt xgetbv

/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 6 7 8 9 10 11
  node 0 size: 64148 MB
  node 0 free: 52154 MB
  node distances:
    node 0
    0: 10

From /proc/meminfo
  MemTotal: 65688220 kB
  HugePages_Total: 0
  Hugepagesize: 2048 kB

/usr/bin/lsb_release -d
  SUSE Linux Enterprise Server 12 SP3

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

SuSE-release:
  SUSE Linux Enterprise Server 12 (x86_64)
  VERSION = 12
  PATCHLEVEL = 3
  # 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-SP3"
    VERSION_ID="12.3"
    PRETTY_NAME="SUSE Linux Enterprise Server 12 SP3"
    ID="sles"

(Continued on next page)
**SPEC CPU2017 Floating Point Rate Result**

**Supermicro**
SuperServer 5019C-WR (X11SCW-F, Intel Xeon E-2186G)

---

**Platform Notes (Continued)**

```
ANSI_COLOR="0;32"
CPE_NAME="cpe:/o:suse:sles:12:sp3"

uname -a:
    Linux linux-6oj1 4.4.114-94.11-default #1 SMP Thu Feb 1 19:28:26 UTC 2018 (4309ff9)
    x86_64 x86_64 x86_64 GNU/Linux

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 Oct 24 17:18

SPEC is set to: /home/cpu2017
    Filesystem Type Size Used Avail Use% Mounted on
    /dev/nvme0n1p4 xfs 1.8T 14G 1.7T 1% /home

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. 1.0 10/11/2018
    Memory:
        4x Micron 18ADF2G72AZ-2G6H1R 16 GB 2 rank 2667
```

---

**Compiler Version Notes**

```
==============================================================================
 CC  519.lbm_r(base) 538.imagick_r(base, peak) 544.nab_r(base, peak)
==============================================================================
icc (ICC) 18.0.2 20180210
Copyright (C) 1985-2018 Intel Corporation. All rights reserved.

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Compiler Version Notes (Continued)

CXXC 508.namd_r(base) 510.parest_r(base, peak)

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

icpc (ICC) 18.0.2 20180210
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CXXC 508.namd_r(peak)
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icc (ICC) 18.0.2 20180210
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icc (ICC) 18.0.2 20180210
Copyright (C) 1985-2018 Intel Corporation. All rights reserved.
ifort (IFORT) 18.0.2 20180210
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icc (ICC) 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

Benchmarks using both Fortran and C:
ifort -m64 icc -m64 -std=c11

Benchmarks using both C and C++:
icpc -m64 icc -m64 -std=c11

Benchmarks using Fortran, C, and C++:
icpc -m64 icc -m64 -std=c11 ifort -m64
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Base Portability Flags

503.bwaves_r: -DSPEC_LP64
507.cactuBSSN_r: -DSPEC_LP64
508.namd_r: -DSPEC_LP64
510.parest_r: -DSPEC_LP64
511.povray_r: -DSPEC_LP64
519.lbm_r: -DSPEC_LP64
521.wrf_r: -DSPEC_LP64 -DSPEC_CASE_FLAG -convert big_endian
526.blender_r: -DSPEC_LP64 -DSPEC_LINUX -funsigned-char
527.cam4_r: -DSPEC_LP64 -DSPEC_CASE_FLAG
538.imagick_r: -DSPEC_LP64
544.nab_r: -DSPEC_LP64
549.fotonik3d_r: -DSPEC_LP64
554.roms_r: -DSPEC_LP64

Base Optimization Flags

C benchmarks:
-xCORE-AVX2 -ipo -O3 -no-prec-div -qopt-prefetch -ffinite-math-only
-qopt-mem-layout-trans=3

C++ benchmarks:
-xCORE-AVX2 -ipo -O3 -no-prec-div -qopt-prefetch -ffinite-math-only
-qopt-mem-layout-trans=3

Fortran benchmarks:
-xCORE-AVX2 -ipo -O3 -no-prec-div -qopt-prefetch -ffinite-math-only
-qopt-mem-layout-trans=3 -auto -nostandard-realloc-lhs

Benchmarks using both Fortran and C:
-xCORE-AVX2 -ipo -O3 -no-prec-div -qopt-prefetch -ffinite-math-only
-qopt-mem-layout-trans=3 -auto -nostandard-realloc-lhs

Benchmarks using both C and C++:
-xCORE-AVX2 -ipo -O3 -no-prec-div -qopt-prefetch -ffinite-math-only
-qopt-mem-layout-trans=3

Benchmarks using Fortran, C, and C++:
-xCORE-AVX2 -ipo -O3 -no-prec-div -qopt-prefetch -ffinite-math-only
-qopt-mem-layout-trans=3 -auto -nostandard-realloc-lhs
SPEC CPU2017 Floating Point Rate Result
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Supermicro
SuperServer 5019C-WR (X11SCW-F, Intel Xeon E-2186G)

<table>
<thead>
<tr>
<th>CPU2017 License</th>
<th>001176</th>
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<td>Test Sponsor</td>
<td>Supermicro</td>
</tr>
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<td>Tested by</td>
<td>Supermicro</td>
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<tr>
<td>SPECrate2017_fp_base</td>
<td>38.1</td>
</tr>
<tr>
<td>SPECrate2017_fp_peak</td>
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<td>Mar-2018</td>
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</table>

Peak Compiler Invocation

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

C++ benchmarks:
`icpc -m64`

Fortran benchmarks:
`ifort -m64`

Benchmarks using both Fortran and C:
`ifort -m64 icc -m64 -std=c11`

Benchmarks using both C and C++:
`icpc -m64 icc -m64 -std=c11`

Benchmarks using Fortran, C, and C++:
`icpc -m64 icc -m64 -std=c11 ifort -m64`

Peak Portability Flags

Same as Base Portability Flags

Peak Optimization Flags

C benchmarks:
```
519.lbm_r: -prof-gen(pass 1) -prof-use(pass 2) -ipo -xCORE-AVX2 -O3  
-no-prec-div -qopt-prefetch -ffinite-math-only  
-qopt-mem-layout-trans=3
```
```
538.imagick_r: -xCORE-AVX2 -ipo -O3 -no-prec-div -qopt-prefetch  
-ffinite-math-only -qopt-mem-layout-trans=3
```
```
544.nab_r: Same as 538.imagick_r
```

C++ benchmarks:
```
508.namd_r: -prof-gen(pass 1) -prof-use(pass 2) -ipo -xCORE-AVX2 -O3  
-no-prec-div -qopt-prefetch -ffinite-math-only  
-qopt-mem-layout-trans=3
```

(Continued on next page)
**SPEC CPU2017 Floating Point Rate Result**

Supermicro
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**Peak Optimization Flags (Continued)**

510.parest_r: -xCORE-AVX2 -ipo -O3 -no-prec-div -qopt-prefetch  
-ffinite-math-only -qopt-mem-layout-trans=3

Fortran benchmarks:

503.bwaves_r: -xCORE-AVX2 -ipo -O3 -no-prec-div -qopt-prefetch  
-ffinite-math-only -qopt-mem-layout-trans=3 -auto  
-nostandard-realloc-lhs

549.fotonik3d_r: Same as 503.bwaves_r

554.roms_r: -prof-gen(pass 1) -prof-use(pass 2) -ipo -xCORE-AVX2 -O3  
-no-prec-div -qopt-prefetch -ffinite-math-only  
-qopt-mem-layout-trans=3 -auto -nostandard-realloc-lhs

Benchmarks using both Fortran and C:

521.wrf_r: -prof-gen(pass 1) -prof-use(pass 2) -ipo -xCORE-AVX2 -O3  
-no-prec-div -qopt-prefetch -ffinite-math-only  
-qopt-mem-layout-trans=3 -auto -nostandard-realloc-lhs

527.cam4_r: basepeak = yes

Benchmarks using both C and C++:

511.povray_r: -prof-gen(pass 1) -prof-use(pass 2) -ipo -xCORE-AVX2 -O3  
-no-prec-div -qopt-prefetch -ffinite-math-only  
-qopt-mem-layout-trans=3

526.blender_r: basepeak = yes

Benchmarks using Fortran, C, and C++:

507.cactuBSSN_r: basepeak = yes

---

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/Intel-ic18.0-official-linux64.2017-12-21.xml

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