**SPEC® CPU2017 Floating Point Rate Result**

**Supermicro**
SuperServer 5019C-L (X11SCL-IF, Intel Xeon E-2104G)

<table>
<thead>
<tr>
<th>Software</th>
<th>Hardware</th>
</tr>
</thead>
<tbody>
<tr>
<td>OS: SUSE Linux Enterprise Server 12 SP3 (x86_64)</td>
<td>CPU Name: Intel Xeon E-2104G</td>
</tr>
<tr>
<td>Compiler: C/C++: Version 18.0.2.199 of Intel C/C++</td>
<td>Max MHz.: 3200</td>
</tr>
<tr>
<td>Compiler for Linux;</td>
<td>Nominal: 3200</td>
</tr>
<tr>
<td>Fortran: Version 18.0.2.199 of Intel Fortran</td>
<td>Enabled: 4 cores, 1 chip</td>
</tr>
<tr>
<td>Compiler for Linux</td>
<td>Orderable: 1 chip</td>
</tr>
<tr>
<td>Parallel: No</td>
<td>Cache L1: 32 KB I + 32 KB D on chip per core</td>
</tr>
<tr>
<td>Firmware: Supermicro BIOS version 1.0 released Sep-2018</td>
<td>L2: 256 KB I+D on chip per core</td>
</tr>
<tr>
<td>File System: xfs</td>
<td>L3: 8 MB I+D on chip per chip</td>
</tr>
<tr>
<td>System State: Run level 3 (multi-user)</td>
<td>Other: None</td>
</tr>
<tr>
<td>Base Pointers: 64-bit</td>
<td>Memory: 32 GB (2 x 16 GB 2Rx8 PC4-2666V-E)</td>
</tr>
<tr>
<td>Peak Pointers: 64-bit</td>
<td>Storage: 1 x 512 GB NVMe SSD</td>
</tr>
<tr>
<td>Other: None</td>
<td>Other: None</td>
</tr>
</tbody>
</table>

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

**SPECrate2017_fp_base = 26.0**  
**SPECrate2017_fp_peak = 26.5**
Supermicro
SuperServer 5019C-L (X11SCL-IF, Intel Xeon E-2104G)

SPECrate2017_fp_base = 26.0
SPECrate2017_fp_peak = 26.5

Results Table

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<td>14.8</td>
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</tbody>
</table>

SPECrate2017_fp_base = 26.0
SPECrate2017_fp_peak = 26.5

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.

(Continued on next page)
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SPECrate2017_fp_base = 26.0
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General Notes (Continued)

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.

Platform Notes

Sysinfo program /home/cpu2017/bin/sysinfo
Rev: r5974 of 2018-05-19 9bcde8f2999c33d61f64985e45859ea9
running on linux-01gl Fri Nov  9 09:01:20 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) E-2104G CPU @ 3.20GHz
  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

From lscpu:
Architecture: x86_64
CPU op-mode(s): 32-bit, 64-bit
Byte Order: Little Endian
CPU(s): 4
On-line CPU(s) list: 0-3
Thread(s) per core: 1
Core(s) per socket: 4
Socket(s): 1
NUMA node(s): 1
Vendor ID: GenuineIntel
CPU family: 6
Model: 158
Model name: Intel(R) Xeon(R) E-2104G CPU @ 3.20GHz
Stepping: 10
CPU MHz: 3200.067
CPU max MHz: 3200.0000
CPU min MHz: 800.0000
BogoMIPS: 6383.97
Virtualization: VT-x
L1d cache: 32K

(Continued on next page)
Platform Notes (Continued)

L1i cache: 32K
L2 cache: 256K
L3 cache: 8192K
NUMA node0 CPU(s): 0-3
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 arch_perfmon pebs bts rep_good nopl xtopology nonstop_tsc
aperfmpref 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 arat epb invpcid_single pni pts
dtherm hwp hwcap notify hwp_act_window hwp_epp intel_pt rsb_ctxsw spec_ctrl retpoline
kaiser tpr_shadow vnmi flexpriority ept vpid fsgsbase tsc_adjust bmi1 hle avx2 smep
bmi2 erms invpcid rtm mpx rdseed adx smap clflushopt xsaveopt xsaves xgetbv

/proc/cpuinfo cache data
  cache size: 8192 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
  node 0 size: 32089 MB
  node 0 free: 22102 MB
  node distances:
    node 0
    0: 10

From /proc/meminfo
  MemTotal: 32860044 kB
  HugePages_Total: 0
  Hugepagesize: 2048 kB

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

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SuperServer 5019C-L (X11SCL-IF , Intel Xeon E-2104G)

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

Compiler Version Notes (Continued)

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

CXXC 508.namd_r(peak)

icpc (ICC) 18.0.2 20180210
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CC 511.povray_r(base) 526.blender_r(base, peak)

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icc (ICC) 18.0.2 20180210
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CC 511.povray_r(peak)

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FC 507.cactuBSSN_r(base, peak)

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Copyright (C) 1985-2018 Intel Corporation. All rights reserved.
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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FC 503.bwaves_r(base, peak) 549.fotonik3d_r(base, peak) 554.roms_r(base)

ifort (IFORT) 18.0.2 20180210
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(Continued on next page)
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Compiler Version Notes (Continued)

FC 554.roms_r(peak)

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Copyright (C) 1985-2018 Intel Corporation. All rights reserved.

CC 521.wrf_r(base) 527.cam4_r(base)

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CC 521.wrf_r(peak) 527.cam4_r(peak)

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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
### SPEC CPU2017 Floating Point Rate Result

**Supermicro**

SuperServer 5019C-L (X11SCL-IF, Intel Xeon E-2104G)

<table>
<thead>
<tr>
<th>SPECrate2017_fp_base</th>
<th>SPECrate2017_fp_peak</th>
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<tbody>
<tr>
<td>26.0</td>
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**CPU2017 License:** 001176

**Test Sponsor:** Supermicro

**Tested by:** Supermicro

**Test Date:** Nov-2018

**Hardware Availability:** Nov-2018

**Software Availability:** Mar-2018

### 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

**Supermicro**  
SuperServer 5019C-L (X11SCL-IF , Intel Xeon E-2104G)  

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<th>CPU2017 License: 001176</th>
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</tr>
</tbody>
</table>

### SPECrate2017_fp_base = 26.0  
### SPECrate2017_fp_peak = 26.5

---

## Peak Compiler Invocation

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

C++ benchmarks:
```bash
icpc -m64
```

Fortran benchmarks:
```bash
ifort -m64
```

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

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

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

---

## Peak Portability Flags

Same as Base Portability Flags

---

## Peak Optimization Flags

### C benchmarks:
```bash
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: basepeak = yes
544.nab_r: -xCORE-AVX2 -ipo -O3 -no-prec-div -qopt-prefetch -ffinite-math-only -qopt-mem-layout-trans=3
```

### C++ benchmarks:
```bash
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)
Peak Optimization Flags (Continued)

510.parest_r: -xCORE-AVX2 -ipo -03 -no-prec-div -qopt-prefetch -ffinite-math-only -qopt-mem-layout-trans=3

Fortran benchmarks:

503.bwaves_r: basepeak = yes

549.fotonik3d_r: -xCORE-AVX2 -ipo -03 -no-prec-div -qopt-prefetch -ffinite-math-only -qopt-mem-layout-trans=3 -auto -nostandard-realloc-lhs

549.fotonik3d_r: basepeak = yes

Benchmarks using both Fortran and C:

-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 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: -xCORE-AVX2 -ipo -03 -no-prec-div -qopt-prefetch -ffinite-math-only -qopt-mem-layout-trans=3

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
http://www.spec.org/cpu2017/flags/Supermicro-Platform-Settings-V1.2-SKL-revD.xml
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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 2018-11-08 20:01:19-0500.
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