**SPEC® CPU2017 Floating Point Speed Result**

Supermicro

SuperStorage 5029P-E1CTR12L (X11SPH-nCTF, Intel Xeon Platinum 8153)

**SPECspeed2017_fp_base = 53.9**

**SPECspeed2017_fp_peak = 54.1**

<table>
<thead>
<tr>
<th>Threads</th>
<th>SPECspeed2017_fp_base (53.9)</th>
<th>SPECspeed2017_fp_peak (54.1)</th>
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<tbody>
<tr>
<td>603.bwaves_s</td>
<td>16</td>
<td></td>
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<tr>
<td>607.cactuBSSN_s</td>
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<td>619.lbm_s</td>
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<td>621.wrf_s</td>
<td>16</td>
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<td>627.cam4_s</td>
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</tr>
<tr>
<td>628.pop2_s</td>
<td>16</td>
<td></td>
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<td>638.imagick_s</td>
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<td>644.nab_s</td>
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<td>649.fotonik3d_s</td>
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</tr>
<tr>
<td>654.roms_s</td>
<td>16</td>
<td>57.0</td>
</tr>
</tbody>
</table>

**Hardware**

- **CPU Name:** Intel Xeon Platinum 8153
- **Max MHz.:** 2800
- **Nominal:** 2000
- **Enabled:** 16 cores, 1 chip
- **Orderable:** 1 chip
- **Cache L1:** 32 KB I + 32 KB D on chip per core
- **Cache L2:** 1 MB I+D on chip per core
- **Cache L3:** 22 MB I+D on chip per chip
- **Memory:** 192 GB (6 x 32 GB 2Rx4 PC4-2666V-R)
- **Storage:** 1 x 2 TB NVMe SSD
- **Other:** None

**Software**

- **OS:** SUSE Linux Enterprise Server 12 SP3 (x86_64)
- **Kernel:** 4.4.114-94.11-default
- **Compiler:** C/C++: Version 18.0.2.199 of Intel C/C++ Compiler for Linux;
  Fortran: Version 18.0.2.199 of Intel Fortran Compiler for Linux
- **Parallel:** Yes
- **Firmware:** Supermicro BIOS version 2.1 released Jun-2018
- **File System:** xfs
- **System State:** Run level 3 (multi-user)
- **Base Pointers:** 64-bit
- **Peak Pointers:** 64-bit
- **Other:** jemalloc memory allocator library V5.0.1
**SPEC CPU2017 Floating Point Speed Result**

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**Supermicro**

SuperStorage 5029P-E1CTR12L (X11SPH-nCTF, Intel Xeon Platinum 8153)

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<tr>
<th>Benchmark</th>
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<th>Ratio</th>
<th>Base</th>
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<th>Ratio</th>
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</tr>
</tbody>
</table>

**SPECspeed2017_fp_base = 53.9**

**SPECspeed2017_fp_peak = 54.1**

**Results 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,compact"

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
```

jemalloc: jemalloc, a general purpose malloc implementation;
jemalloc: built with the RedHat Enterprise 7.5, and the system compiler gcc 4.8.5;

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.
**Platform Notes**

BIOS Settings:
- Hyper-Threading = Disable
- LLC prefetch = Enable
- Power Technology = Custom
- Power Performance Tuning = BIOS Controls EPB
- ENERGY_PERF_BIAS_CFG mode = Maximum Performance
- Hardware P-state = Out of Band Mode
- XPT Prefetch = Enable
- Stale AtoS = Enable
- LLC dead line alloc = Disable
- SDDC Plus One = Disable
- ADDDC Sparing = Disable
- Patrol Scrub = Disable
- Sysinfo program /home/cpu2017/bin/sysinfo

Rev: r5797 of 2017-06-14 96c45e4568ad54c135fd618bccc091c0f
running on linux-liai Wed Jun 20 02:05:31 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) Platinum 8153 CPU @ 2.00GHz
 1 "physical id"s (chips)
 16 "processors"
core(s), siblings (Caution: counting these is hw and system dependent. The following excerpts from /proc/cpuinfo might not be reliable. Use with caution.)
cpu cores : 16
siblings : 16
physical 0: cores 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15
```

From lscpu:
```
Architecture: x86_64
CPU op-mode(s): 32-bit, 64-bit
Byte Order: Little Endian
CPU(s): 16
On-line CPU(s) list: 0-15
Thread(s) per core: 1
Core(s) per socket: 16
Socket(s): 1
NUMA node(s): 1
Vendor ID: GenuineIntel
CPU family: 6
Model: 85
Model name: Intel(R) Xeon(R) Platinum 8153 CPU @ 2.00GHz
Stepping: 4
CPU MHz: 2000.002
```

(Continued on next page)
Supermicro SuperStorage 5029P-E1CTR12L (X11SPH-nCTF, Intel Xeon Platinum 8153)

SPECspeed2017_fp_base = 53.9
SPECspeed2017_fp_peak = 54.1

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

Platform Notes (Continued)

BogoMIPS: 4000.00
Virtualization: VT-x
L1d cache: 32K
L1i cache: 32K
L2 cache: 1024K
L3 cache: 22528K
NUMA node0 CPU(s): 0-15
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 bs rep_good nopl xtopology nonstop_tsc
aperfmperf eagerfpu pni pclmulqdq dtes64 monitor ds_cpl vmx smx est tm2 ssse3 sdbg
fma cx16 xtpr pdcm pcdi dca sse4_1 sse4_2 x2apic movbe popcnt tsc_deadline_timer aes
xsave avx f16c rdrand lahf_lm abm 3dnowprefetch ida arat epb invpcid_single pln pts
dtherm hwp_epp intel_pt rsb_ctxswspec_ctrl retpoline kaiser tpr_shadow vmm
flexpriority ept vpid fsgsbase tsc_adjust bmi1 hle avx2 smep bmi2 erms invpcid rtm
cqm mpx avx512f avx512dq rdseed adx smap clflushopt clwb avx512cd avx512bw avx512vl
xsaveopt xsavec xgetbv1 cqm_llc cqm_occup_llc pku ospke

/proc/cpuinfo cache data
  cache size: 22528 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 12 13 14 15
  node 0 size: 191880 MB
  node 0 free: 183826 MB
  node distances:
    node 0
      0: 10

From /proc/meminfo
  MemTotal: 196486044 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:

(Continued on next page)
SPEC CPU2017 Floating Point Speed Result

Supermicro
SuperStorage 5029P-E1CTR12L (X11SPH-nCTF, Intel Xeon Platinum 8153)

SPECspeed2017_fp_base = 53.9
SPECspeed2017_fp_peak = 54.1

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

Platform Notes (Continued)

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"

uname -a:
 Linux linux-liai 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

run-level 3 Jun 19 19:31

SPEC is set to: /home/cpu2017
Filesystem Type Size Used Avail Use% Mounted on
/dev/nvme0n1p4 xfs 1.8T 49G 1.8T 3% /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. 2.1 06/11/2018
Memory:
  2x NO DIMM NO DIMM
  6x Samsung M393A4K40CB2-CTD 32 GB 2 rank 2666

(End of data from sysinfo program)

Compiler Version Notes

==============================================================================
 CC  619.lbm_s(base) 638.imagick_s(base, peak) 644.nab_s(base, peak)
==============================================================================
icc (ICC) 18.0.2 20180210
Copyright (C) 1985-2018 Intel Corporation. All rights reserved.
==============================================================================

==============================================================================
 CC  619.lbm_s(peak)
==============================================================================
icc (ICC) 18.0.2 20180210
Copyright (C) 1985-2018 Intel Corporation. All rights reserved.
==============================================================================

(Continued on next page)
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SPEC CPU2017 Floating Point Speed Result
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SPECspeed2017_fp_base = 53.9
SPECspeed2017_fp_peak = 54.1

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

Test Date: Jun-2018
Hardware Availability: Jul-2017
Software Availability: Mar-2018

Compiler Version Notes (Continued)

FC 607.cactuBSSN_s(base, peak)

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

------------------------------------------------------------------------------
FC 603.bwaves_s(base) 649.fotonik3d_s(base) 654.roms_s(base, peak)

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

==============================================================================
FC 603.bwaves_s(peak) 649.fotonik3d_s(peak)

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

==============================================================================
CC 621.wrf_s(base) 627.cam4_s(base, peak) 628.pop2_s(base)

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

==============================================================================
CC 621.wrf_s(peak) 628.pop2_s(peak)

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

Base Compiler Invocation

C benchmarks:
icc -m64 -std=c11

(Continued on next page)
Base Compiler Invocation (Continued)

Fortran benchmarks:
ifort -m64

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

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

Base Portability Flags

603.bwaves_s: -DSPEC_LP64
607.cactuBSSN_s: -DSPEC_LP64
619.lbm_s: -DSPEC_LP64
621.wrf_s: -DSPEC_LP64 -DSPEC_CASE_FLAG -convert big_endian
627.cam4_s: -DSPEC_LP64 -DSPEC_CASE_FLAG
628.pop2_s: -DSPEC_LP64 -DSPEC_CASE_FLAG -convert big_endian
   -assume byterecl
638.imagick_s: -DSPEC_LP64
644.nab_s: -DSPEC_LP64
649.fotonik3d_s: -DSPEC_LP64
654.roms_s: -DSPEC_LP64

Base Optimization Flags

C benchmarks:
-WL,-z,muldefs -xCORE-AVX512 -ipo -O3 -no-prec-div -qopt-prefetch
-ffinite-math-only -qopt-mem-layout-trans=3 -gopenmp -DSPEC_OPENMP
-L/usr/local/je5.0.1-64/lib -ljemalloc

Fortran benchmarks:
-WL,-z,muldefs -DSPEC_OPENMP -xCORE-AVX512 -ipo -O3 -no-prec-div
-qopt-prefetch -ffinite-math-only -qopt-mem-layout-trans=3 -gopenmp
-nostandard-realloc-lhs -L/usr/local/je5.0.1-64/lib -ljemalloc

Benchmarks using both Fortran and C:
-WL,-z,muldefs -xCORE-AVX512 -ipo -O3 -no-prec-div -qopt-prefetch
-ffinite-math-only -qopt-mem-layout-trans=3 -gopenmp -DSPEC_OPENMP
-nostandard-realloc-lhs -L/usr/local/je5.0.1-64/lib -ljemalloc

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**Supermicro**  
SuperStorage 5029P-E1CTR12L (X11SPH-nCTF, Intel Xeon Platinum 8153)

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<td>SPECspeed2017_fp_peak</td>
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### CPU2017 License: 001176  
Test Sponsor: Supermicro  
Tested by: Supermicro  
Test Date: Jun-2018  
Hardware Availability: Jul-2017  
Software Availability: Mar-2018

### Base Optimization Flags (Continued)

Benchmarks using Fortran, C, and C++:
- `-Wl,-z,muldefs -xCORE-AVX512 -ipo -O3 -no-prec-div -qopt-prefetch`
- `-ffinite-math-only -qopt-mem-layout-trans=3 -qopenmp -DSPEC_OPENMP`
- `-nostandard-realloc-lhs -L/usr/local/je5.0.1-64/lib -ljemalloc`

### Peak Compiler Invocation

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

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

Benchmarks using both Fortran and C:
```
ifort -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:
```
619.lbm_s: basepeak = yes
```
```
638.imagick_s: -xCORE-AVX512 -ipo -O3 -no-prec-div -qopt-prefetch
-ffinite-math-only -qopt-mem-layout-trans=3 -qopenmp
-DSPEC_OPENMP
```
```
644.nab_s: basepeak = yes
```

Fortran benchmarks:
```
603.bwaves_s: -prof-gen(pass 1) -prof-use(pass 2) -DSPEC_SUPPRESS_OPENMP
-DSPEC_OPENMP -O2 -xCORE-AVX512 -qopt-prefetch -ipo -O3
-ffinite-math-only -no-prec-div -qopt-mem-layout-trans=3
```

(Continued on next page)
Supermicro
SuperStorage 5029P-E1CTR12L (X11SPH-nCTF, Intel Xeon Platinum 8153)

SPECspeed2017_fp_base = 53.9
SPECspeed2017_fp_peak = 54.1

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

Peak Optimization Flags (Continued)

603.bwaves_s (continued):
-qopenmp -nostandard-realloc-lhs

649.fotonik3d_s: Same as 603.bwaves_s

654.roms_s: basepeak = yes

Benchmarks using both Fortran and C:

621.wrf_s: -prof-gen(pass 1) -prof-use(pass 2) -O2 -xCORE-AVX512
-qopt-prefetch -ipo -O3 -ffinite-math-only -no-prec-div
-qopt-mem-layout-trans=3 -DSPEC_SUPPRESS_OPENMP -qopenmp
-DSPEC_OPENMP -nostandard-realloc-lhs

627.cam4_s: -xCORE-AVX512 -ipo -O3 -no-prec-div -qopt-prefetch
-ffinite-math-only -qopt-mem-layout-trans=3 -qopenmp
-DSPEC_OPENMP -nostandard-realloc-lhs

628.pop2_s: Same as 621.wrf_s

Benchmarks using Fortran, C, and C++:

607.cactuBSSN_s: 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.

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