



# SPEC® CPU2017 Floating Point Speed Result

Copyright 2017-2019 Standard Performance Evaluation Corporation

## Supermicro

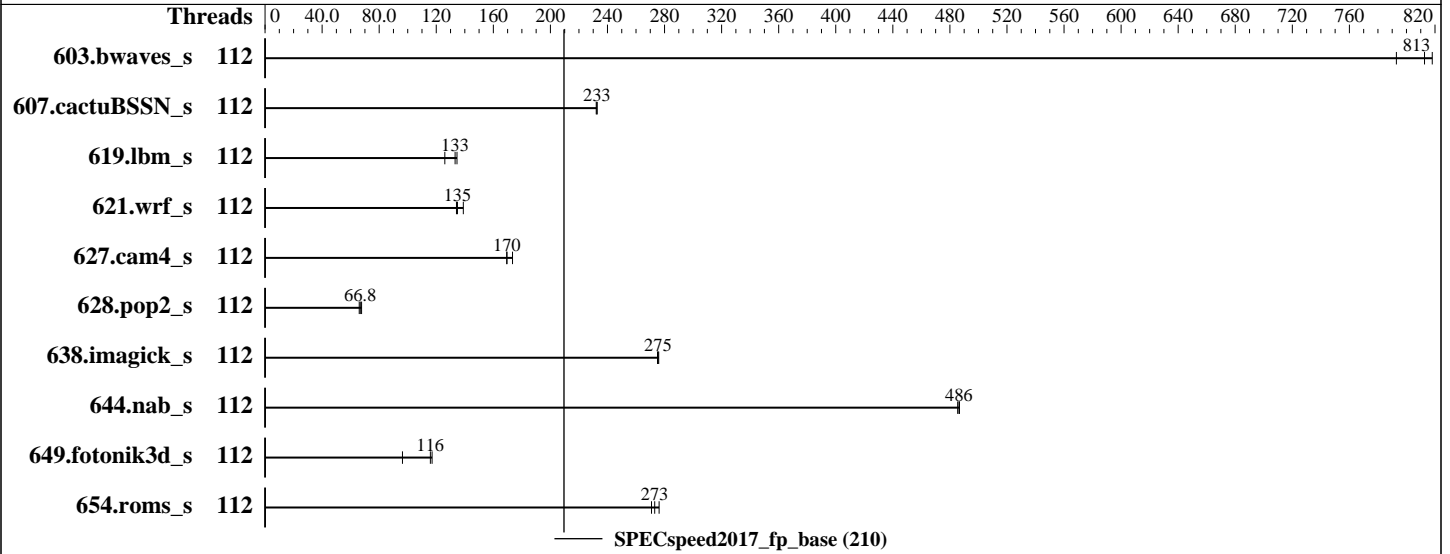
SuperServer 2049U-TR4  
(X11QPH+, Intel Xeon Platinum 8280L)

SPECspeed2017\_fp\_base = 210

SPECspeed2017\_fp\_peak = Not Run

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

Test Date: Feb-2019  
Hardware Availability: Apr-2019  
Software Availability: Mar-2019



### Hardware

CPU Name: Intel Xeon Platinum 8280L  
Max MHz.: 4000  
Nominal: 2700  
Enabled: 112 cores, 4 chips, 2 threads/core  
Orderable: 1,2,4 chips  
Cache L1: 32 KB I + 32 KB D on chip per core  
L2: 1 MB I+D on chip per core  
L3: 38.5 MB I+D on chip per chip  
Other: None  
Memory: 1536 GB (48 x 32 GB 2Rx4 PC4-2933Y-R)  
Storage: 1 x 3.84 TB SATA SSD  
Other: None

### Software

OS: Red Hat Enterprise Linux Server release 7.6 (Maipo)  
3.10.0-957.el7.x86\_64  
Compiler: C/C++: Version 19.0.0.117 of Intel C/C++ Compiler Build 20180804 for Linux;  
Fortran: Version 19.0.0.117 of Intel Fortran Compiler Build 20180804 for Linux  
Parallel: Yes  
Firmware: Version 3.0a released Feb-2019 tested as Jan-2019  
File System: xfs  
System State: Run level 3 (multi-user)  
Base Pointers: 64-bit  
Peak Pointers: Not Applicable  
Other: None



# SPEC CPU2017 Floating Point Speed Result

Copyright 2017-2019 Standard Performance Evaluation Corporation

## Supermicro

SuperServer 2049U-TR4  
(X11QPH+, Intel Xeon Platinum 8280L)

SPECspeed2017\_fp\_base = 210

SPECspeed2017\_fp\_peak = Not Run

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

Test Date: Feb-2019  
Hardware Availability: Apr-2019  
Software Availability: Mar-2019

## Results Table

Benchmark	Base							Peak						
	Threads	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Threads	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
603.bwaves_s	112	<b>72.6</b>	<b>813</b>	74.4	793	72.1	818							
607.cactuBSSN_s	112	71.6	233	71.8	232	<b>71.7</b>	<b>233</b>							
619.lbm_s	112	<b>39.3</b>	<b>133</b>	38.9	135	41.6	126							
621.wrf_s	112	95.2	139	98.6	134	<b>98.1</b>	<b>135</b>							
627.cam4_s	112	51.1	173	52.3	169	<b>52.3</b>	<b>170</b>							
628.pop2_s	112	175	67.7	180	66.0	<b>178</b>	<b>66.8</b>							
638.imagick_s	112	52.4	275	<b>52.4</b>	<b>275</b>	52.3	276							
644.nab_s	112	36.0	485	<b>35.9</b>	<b>486</b>	35.9	487							
649.fotonik3d_s	112	77.9	117	94.7	96.3	<b>78.7</b>	<b>116</b>							
654.roms_s	112	57.0	276	<b>57.7</b>	<b>273</b>	58.1	271							

SPECspeed2017\_fp\_base = 210

SPECspeed2017\_fp\_peak = Not Run

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

## 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,1,0"

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 i9-799X 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.

## Platform Notes

BIOS Settings:

Intel Virtualization Technology = Disable

(Continued on next page)



# SPEC CPU2017 Floating Point Speed Result

Copyright 2017-2019 Standard Performance Evaluation Corporation

## Supermicro

SuperServer 2049U-TR4  
(X11QPH+, Intel Xeon Platinum 8280L)

SPECspeed2017\_fp\_base = 210

SPECspeed2017\_fp\_peak = Not Run

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

**Test Date:** Feb-2019  
**Hardware Availability:** Apr-2019  
**Software Availability:** Mar-2019

### Platform Notes (Continued)

SNC = Enable  
Stale AtoS = Enable  
LLC Dead Line Alloc = Disable  
IMC Interleaving = 1-way Interleave  
Patrol Scrub = Disable  
Power Performance Tuning = BIOS Controls EPB  
Energy Performance BIAS Setting = Max Performance  
Enhanced Halt State (C1E) = Disable  
Sysinfo program /home/cpu2017/bin/sysinfo  
Rev: r5974 of 2018-05-19 9bcde8f2999c33d61f64985e45859ea9  
running on 116-252.pnet Wed Feb 13 17:36:15 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  
model name : Intel(R) Xeon(R) Platinum 8280L CPU @ 2.70GHz  
4 "physical id"s (chips)  
224 "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 : 28  
siblings : 56  
physical 0: cores 0 1 2 3 4 5 6 8 9 10 11 12 13 14 16 17 18 19 20 21 22 24 25 26 27 28 29 30  
physical 1: cores 0 1 2 3 4 5 6 8 9 10 11 12 13 14 16 17 18 19 20 21 22 24 25 26 27 28 29 30  
physical 2: cores 0 1 2 3 4 5 6 8 9 10 11 12 13 14 16 17 18 19 20 21 22 24 25 26 27 28 29 30  
physical 3: cores 0 1 2 3 4 5 6 8 9 10 11 12 13 14 16 17 18 19 20 21 22 24 25 26 27 28 29 30

From lscpu:  
Architecture: x86\_64  
CPU op-mode(s): 32-bit, 64-bit  
Byte Order: Little Endian  
CPU(s): 224  
On-line CPU(s) list: 0-223  
Thread(s) per core: 2  
Core(s) per socket: 28  
Socket(s): 4  
NUMA node(s): 8  
Vendor ID: GenuineIntel  
CPU family: 6  
Model: 85  
Model name: Intel(R) Xeon(R) Platinum 8280L CPU @ 2.70GHz

(Continued on next page)



# SPEC CPU2017 Floating Point Speed Result

Copyright 2017-2019 Standard Performance Evaluation Corporation

## Supermicro

SuperServer 2049U-TR4  
(X11QPH+, Intel Xeon Platinum 8280L)

SPECspeed2017\_fp\_base = 210

SPECspeed2017\_fp\_peak = Not Run

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

Test Date: Feb-2019  
Hardware Availability: Apr-2019  
Software Availability: Mar-2019

### Platform Notes (Continued)

```
Stepping: 6
CPU MHz: 2701.000
CPU max MHz: 2701.0000
CPU min MHz: 1000.0000
BogoMIPS: 5400.00
Virtualization: VT-x
L1d cache: 32K
L1i cache: 32K
L2 cache: 1024K
L3 cache: 39424K
NUMA node0 CPU(s): 0-3,7-9,14-17,21-23,112-115,119-121,126-129,133-135
NUMA node1 CPU(s): 4-6,10-13,18-20,24-27,116-118,122-125,130-132,136-139
NUMA node2 CPU(s): 28-31,35-37,42-45,49-51,140-143,147-149,154-157,161-163
NUMA node3 CPU(s): 32-34,38-41,46-48,52-55,144-146,150-153,158-160,164-167
NUMA node4 CPU(s): 56-59,63-65,70-73,77-79,168-171,175-177,182-185,189-191
NUMA node5 CPU(s): 60-62,66-69,74-76,80-83,172-174,178-181,186-188,192-195
NUMA node6 CPU(s): 84-87,91-93,98-101,105-107,196-199,203-205,210-213,217-219
NUMA node7 CPU(s): 88-90,94-97,102-104,108-111,200-202,206-209,214-216,220-223
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
aperfmpperf eagerfpu pni pclmulqdq dtes64 monitor ds_cpl vmx smx est tm2 ssse3 sdbg
fma cx16 xtpr pdcm pcid dca sse4_1 sse4_2 x2apic movbe popcnt tsc_deadline_timer aes
xsave avx f16c rdrand lahf_lm abm 3dnowprefetch epb cat_l3 cdp_l3 intel_pt ssbd mba
ibrs ibpb stibp ibrs_enhanced tpr_shadow vnmi flexpriority ept vpid fsgsbase
tsc_adjust bmi1 hle avx2 smep bmi2 erms invpcid rtm cqm mpx rdt_a avx512f avx512dq
rdseed adx smap clflushopt clwb avx512cd avx512bw avx512vl xsaveopt xsavec xgetbv1
cqm_llc cqm_occup_llc cqm_mbm_total cqm_mbm_local dtherm ida arat pln pts pku ospke
avx512_vnni spec_ctrl intel_stibp flush_lld arch_capabilities
```

```
/proc/cpuinfo cache data
cache size : 39424 KB
```

```
From numactl --hardware WARNING: a numactl 'node' might or might not correspond to a
physical chip.
available: 8 nodes (0-7)
node 0 cpus: 0 1 2 3 7 8 9 14 15 16 17 21 22 23 112 113 114 115 119 120 121 126 127 128
129 133 134 135
node 0 size: 195230 MB
node 0 free: 190796 MB
node 1 cpus: 4 5 6 10 11 12 13 18 19 20 24 25 26 27 116 117 118 122 123 124 125 130 131
132 136 137 138 139
node 1 size: 196608 MB
node 1 free: 191658 MB
node 2 cpus: 28 29 30 31 35 36 37 42 43 44 45 49 50 51 140 141 142 143 147 148 149 154
155 156 157 161 162 163
node 2 size: 196608 MB
```

(Continued on next page)



# SPEC CPU2017 Floating Point Speed Result

Copyright 2017-2019 Standard Performance Evaluation Corporation

## Supermicro

SuperServer 2049U-TR4  
(X11QPH+, Intel Xeon Platinum 8280L)

SPECspeed2017\_fp\_base = 210

SPECspeed2017\_fp\_peak = Not Run

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

Test Date: Feb-2019  
Hardware Availability: Apr-2019  
Software Availability: Mar-2019

### Platform Notes (Continued)

```

node 2 free: 192189 MB
node 3 cpus: 32 33 34 38 39 40 41 46 47 48 52 53 54 55 144 145 146 150 151 152 153 158
159 160 164 165 166 167
node 3 size: 196608 MB
node 3 free: 189751 MB
node 4 cpus: 56 57 58 59 63 64 65 70 71 72 73 77 78 79 168 169 170 171 175 176 177 182
183 184 185 189 190 191
node 4 size: 196608 MB
node 4 free: 192270 MB
node 5 cpus: 60 61 62 66 67 68 69 74 75 76 80 81 82 83 172 173 174 178 179 180 181 186
187 188 192 193 194 195
node 5 size: 196608 MB
node 5 free: 191474 MB
node 6 cpus: 84 85 86 87 91 92 93 98 99 100 101 105 106 107 196 197 198 199 203 204 205
210 211 212 213 217 218 219
node 6 size: 196608 MB
node 6 free: 192257 MB
node 7 cpus: 88 89 90 94 95 96 97 102 103 104 108 109 110 111 200 201 202 206 207 208
209 214 215 216 220 221 222 223
node 7 size: 196608 MB
node 7 free: 191319 MB
node distances:
node  0  1  2  3  4  5  6  7
 0:  10  11  21  21  21  21  21  21
 1:  11  10  21  21  21  21  21  21
 2:  21  21  10  11  21  21  21  21
 3:  21  21  11  10  21  21  21  21
 4:  21  21  21  21  10  11  21  21
 5:  21  21  21  21  11  10  21  21
 6:  21  21  21  21  21  21  10  11
 7:  21  21  21  21  21  21  11  10

```

From /proc/meminfo

```

MemTotal:      1583904108 kB
HugePages_Total:      0
Hugepagesize:      2048 kB

```

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

```

os-release:
NAME="Red Hat Enterprise Linux Server"
VERSION="7.6 (Maipo)"
ID="rhel"
ID_LIKE="fedora"
VARIANT="Server"
VARIANT_ID="server"
VERSION_ID="7.6"
PRETTY_NAME="Red Hat Enterprise Linux Server 7.6 (Maipo)"

```

(Continued on next page)



# SPEC CPU2017 Floating Point Speed Result

Copyright 2017-2019 Standard Performance Evaluation Corporation

## Supermicro

SuperServer 2049U-TR4  
(X11QPH+, Intel Xeon Platinum 8280L)

SPECspeed2017\_fp\_base = 210

SPECspeed2017\_fp\_peak = Not Run

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

Test Date: Feb-2019  
Hardware Availability: Apr-2019  
Software Availability: Mar-2019

### Platform Notes (Continued)

```
redhat-release: Red Hat Enterprise Linux Server release 7.6 (Maipo)
system-release: Red Hat Enterprise Linux Server release 7.6 (Maipo)
system-release-cpe: cpe:/o:redhat:enterprise_linux:7.6:ga:server
```

uname -a:

```
Linux 116-252.pnet 3.10.0-957.el7.x86_64 #1 SMP Thu Oct 4 20:48:51 UTC 2018 x86_64
x86_64 x86_64 GNU/Linux
```

Kernel self-reported vulnerability status:

```
CVE-2017-5754 (Meltdown): Not affected
CVE-2017-5753 (Spectre variant 1): Mitigation: Load fences, __user pointer sanitization
CVE-2017-5715 (Spectre variant 2): Mitigation: Enhanced IBRS
```

run-level 3 Feb 13 15:03

SPEC is set to: /home/cpu2017

```
Filesystem      Type  Size  Used Avail Use% Mounted on
/dev/sda5        xfs   1.7T  217G  1.5T  13% /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. 3.0a 01/23/2019

Memory:

48x Samsung M393A4K40CB2-CVF 32 GB 2 rank 2933, configured at 2934

(End of data from sysinfo program)

### Compiler Version Notes

```
=====  
CC 619.lbm_s(base) 638.imagick_s(base) 644.nab_s(base)  
-----
```

```
Intel(R) C Intel(R) 64 Compiler for applications running on Intel(R) 64,  
Version 19.0.0.117 Build 20180804  
Copyright (C) 1985-2018 Intel Corporation. All rights reserved.  
-----
```

```
=====  
FC 607.cactuBSSN_s(base)  
-----
```

```
Intel(R) C++ Intel(R) 64 Compiler for applications running on Intel(R) 64,  
Version 19.0.0.117 Build 20180804  
Copyright (C) 1985-2018 Intel Corporation. All rights reserved.
```

(Continued on next page)



# SPEC CPU2017 Floating Point Speed Result

Copyright 2017-2019 Standard Performance Evaluation Corporation

## Supermicro

SuperServer 2049U-TR4  
(X11QPH+, Intel Xeon Platinum 8280L)

SPECspeed2017\_fp\_base = 210

SPECspeed2017\_fp\_peak = Not Run

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

**Test Date:** Feb-2019  
**Hardware Availability:** Apr-2019  
**Software Availability:** Mar-2019

### Compiler Version Notes (Continued)

Intel(R) C Intel(R) 64 Compiler for applications running on Intel(R) 64,  
Version 19.0.0.117 Build 20180804

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

Intel(R) Fortran Intel(R) 64 Compiler for applications running on Intel(R)  
64, Version 19.0.0.117 Build 20180804

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

=====  
FC 603.bwaves\_s(base) 649.fotonik3d\_s(base) 654.roms\_s(base)  
=====

Intel(R) Fortran Intel(R) 64 Compiler for applications running on Intel(R)  
64, Version 19.0.0.117 Build 20180804

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

=====  
CC 621.wrf\_s(base) 627.cam4\_s(base) 628.pop2\_s(base)  
=====

Intel(R) Fortran Intel(R) 64 Compiler for applications running on Intel(R)  
64, Version 19.0.0.117 Build 20180804

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

Intel(R) C Intel(R) 64 Compiler for applications running on Intel(R) 64,  
Version 19.0.0.117 Build 20180804

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

### Base 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
```



# SPEC CPU2017 Floating Point Speed Result

Copyright 2017-2019 Standard Performance Evaluation Corporation

## Supermicro

SuperServer 2049U-TR4  
(X11QPH+, Intel Xeon Platinum 8280L)

SPECspeed2017\_fp\_base = 210

SPECspeed2017\_fp\_peak = Not Run

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

**Test Date:** Feb-2019  
**Hardware Availability:** Apr-2019  
**Software Availability:** Mar-2019

## 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:

```
-xCORE-AVX512 -ipo -O3 -no-prec-div -qopt-prefetch
-ffinite-math-only -qopt-mem-layout-trans=3 -qopenmp -DSPEC_OPENMP
```

Fortran benchmarks:

```
-DSPEC_OPENMP -xCORE-AVX512 -ipo -O3 -no-prec-div -qopt-prefetch
-ffinite-math-only -qopt-mem-layout-trans=3 -qopenmp
-nostandard-realloc-lhs -align array32byte
```

Benchmarks using both Fortran and C:

```
-xCORE-AVX512 -ipo -O3 -no-prec-div -qopt-prefetch
-ffinite-math-only -qopt-mem-layout-trans=3 -qopenmp -DSPEC_OPENMP
-nostandard-realloc-lhs -align array32byte
```

Benchmarks using Fortran, C, and C++:

```
-xCORE-AVX512 -ipo -O3 -no-prec-div -qopt-prefetch
-ffinite-math-only -qopt-mem-layout-trans=3 -qopenmp -DSPEC_OPENMP
-nostandard-realloc-lhs -align array32byte
```

The flags files that were used to format this result can be browsed at

<http://www.spec.org/cpu2017/flags/Intel-ic19.0u1-official-linux64.2019-04-02.html>  
<http://www.spec.org/cpu2017/flags/Supermicro-Platform-Settings-V1.2-CLX-revA.html>

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

<http://www.spec.org/cpu2017/flags/Intel-ic19.0u1-official-linux64.2019-04-02.xml>  
<http://www.spec.org/cpu2017/flags/Supermicro-Platform-Settings-V1.2-CLX-revA.xml>





# SPEC CPU2017 Floating Point Speed Result

Copyright 2017-2019 Standard Performance Evaluation Corporation

## Supermicro

SuperServer 2049U-TR4  
(X11QPH+, Intel Xeon Platinum 8280L)

SPECspeed2017\_fp\_base = 210

SPECspeed2017\_fp\_peak = Not Run

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

**Test Date:** Feb-2019  
**Hardware Availability:** Apr-2019  
**Software Availability:** Mar-2019

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](mailto:info@spec.org).

Tested with SPEC CPU2017 v1.0.5 on 2019-02-13 20:36:15-0500.  
Report generated on 2019-04-02 16:59:46 by CPU2017 PDF formatter v6067.  
Originally published on 2019-04-02.