## SPEC® CPU2017 Floating Point Speed Result

**Supermicro**  
SuperStorage 5029P-E1CTR12L (X11SPH-nCTF, Intel Xeon Gold 6140M)

<table>
<thead>
<tr>
<th>SPECspeed2017_fp_peak = 63.6</th>
<th>SPECspeed2017_fp_base = 63.3</th>
</tr>
</thead>
</table>

**CPU2017 License:** 001176  
**Test Sponsor:** Supermicro  
**Tested by:** Supermicro  
**Test Date:** Jul-2018  
**Hardware Availability:** Mar-2017  
**Software Availability:** Mar-2018

### Threads

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Threads</th>
<th>SPECspeed2017_fp_base</th>
<th>SPECspeed2017.fp_peak</th>
</tr>
</thead>
<tbody>
<tr>
<td>603.bwaves_s</td>
<td>18</td>
<td>63.3</td>
<td>63.6</td>
</tr>
<tr>
<td>607.cactuBSSN_s</td>
<td>18</td>
<td>63.3</td>
<td>63.6</td>
</tr>
<tr>
<td>619.lbm_s</td>
<td>18</td>
<td>63.3</td>
<td>63.6</td>
</tr>
<tr>
<td>621.wrf_s</td>
<td>18</td>
<td>63.3</td>
<td>63.6</td>
</tr>
<tr>
<td>627.cam4_s</td>
<td>18</td>
<td>63.3</td>
<td>63.6</td>
</tr>
<tr>
<td>628.pop2_s</td>
<td>18</td>
<td>63.3</td>
<td>63.6</td>
</tr>
<tr>
<td>638.imagick_s</td>
<td>18</td>
<td>63.3</td>
<td>63.6</td>
</tr>
<tr>
<td>644.nab_s</td>
<td>18</td>
<td>63.3</td>
<td>63.6</td>
</tr>
<tr>
<td>649.fotonik3d_s</td>
<td>18</td>
<td>63.3</td>
<td>63.6</td>
</tr>
<tr>
<td>654.roms_s</td>
<td>18</td>
<td>63.3</td>
<td>63.6</td>
</tr>
</tbody>
</table>

**Hardware**

- **CPU Name:** Intel Xeon Gold 6140M  
- **Max MHz.:** 3700  
- **Nominal:** 2300  
- **Enabled:** 18 cores, 1 chip  
- **Orderable:** 1 chip  
- **Cache L1:** 32 KB I + 32 KB D on chip per core  
- **L2:** 1 MB I+D on chip per core  
- **L3:** 24.75 MB I+D on chip per core  
- **Other:** None  
- **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  
  - 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  
- **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
Copyright 2017-2018 Standard Performance Evaluation Corporation

**Supermicro**
SuperStorage 5029P-E1CTR12L (X11SPH-nCTF, Intel Xeon Gold 6140M)

<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>603.bwaves_s</td>
<td>18</td>
<td>277</td>
<td>213</td>
<td>278</td>
<td>212</td>
<td>278</td>
<td>212</td>
</tr>
<tr>
<td>607.cactusBSSN_s</td>
<td>18</td>
<td>168</td>
<td>99.3</td>
<td>167</td>
<td>99.6</td>
<td>167</td>
<td>99.6</td>
</tr>
<tr>
<td>619.lbm_s</td>
<td>18</td>
<td>263</td>
<td>19.9</td>
<td>263</td>
<td>19.9</td>
<td>264</td>
<td>19.8</td>
</tr>
<tr>
<td>621.wrf_s</td>
<td>18</td>
<td>201</td>
<td>65.7</td>
<td>202</td>
<td>65.6</td>
<td>201</td>
<td>65.8</td>
</tr>
<tr>
<td>627.cam4_s</td>
<td>18</td>
<td>206</td>
<td>43.0</td>
<td>206</td>
<td>43.0</td>
<td>206</td>
<td>43.0</td>
</tr>
<tr>
<td>628.pop2_s</td>
<td>18</td>
<td>208</td>
<td>57.0</td>
<td>208</td>
<td>57.0</td>
<td>208</td>
<td>56.9</td>
</tr>
<tr>
<td>638.imagick_s</td>
<td>18</td>
<td>241</td>
<td>43.0</td>
<td>240</td>
<td>43.0</td>
<td>240</td>
<td>43.0</td>
</tr>
<tr>
<td>644.nab_s</td>
<td>18</td>
<td>147</td>
<td>119</td>
<td>148</td>
<td>118</td>
<td>147</td>
<td>119</td>
</tr>
<tr>
<td>649.fotonik3d_s</td>
<td>18</td>
<td>223</td>
<td>40.0</td>
<td>224</td>
<td>40.6</td>
<td>225</td>
<td>40.5</td>
</tr>
<tr>
<td>654.roms_s</td>
<td>18</td>
<td>296</td>
<td>53.3</td>
<td>297</td>
<td>53.0</td>
<td>298</td>
<td>52.8</td>
</tr>
<tr>
<td>SPECspeed2017_fp_base = 63.3</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SPECspeed2017_fp_peak = 63.6</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</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"
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.
Supermicro
SuperStorage 5029P-E1CTR12L (X11SPH-nCTF, Intel Xeon Gold 6140M)

<table>
<thead>
<tr>
<th>SPECspeed2017_fp_base</th>
<th>63.3</th>
</tr>
</thead>
<tbody>
<tr>
<td>SPECspeed2017_fp_peak</td>
<td>63.6</td>
</tr>
</tbody>
</table>

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

**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 96c45e4568ad54c135fd618bce091c0f
running on linux-liai Thu Jul 5 22:36:12 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) Gold 6140M CPU @ 2.30GHz
 1 "physical id"'s (chips)
 18 "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 : 18
siblings : 18
physical 0: cores 0 1 2 3 4 8 9 10 11 16 17 18 19 20 24 25 26 27

From lscpu:
Architecture: x86_64
CPU op-mode(s): 32-bit, 64-bit
Byte Order: Little Endian
CPU(s): 18
On-line CPU(s) list: 0-17
Thread(s) per core: 1
Core(s) per socket: 18
Socket(s): 1
NUMA node(s): 1
Vendor ID: GenuineIntel
CPU family: 6
Model: 85
Model name: Intel(R) Xeon(R) Gold 6140M CPU @ 2.30GHz
Stepping: 4
CPU MHz: 2300.005

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

---

## Supermicro
**SuperStorage 5029P-E1CTR12L (X11SPH-nCTF, Intel Xeon Gold 6140M)**

<table>
<thead>
<tr>
<th>CPU2017 License</th>
<th>001176</th>
<th>Test Date</th>
<th>Jul-2018</th>
</tr>
</thead>
<tbody>
<tr>
<td>Test Sponsor</td>
<td>Supermicro</td>
<td>Hardware Availability</td>
<td>Jul-2017</td>
</tr>
<tr>
<td>Tested by</td>
<td>Supermicro</td>
<td>Software Availability</td>
<td>Mar-2018</td>
</tr>
</tbody>
</table>

**SPECspeed2017_fp_base = 63.3**

**SPECspeed2017_fp_peak = 63.6**

---

### Platform Notes (Continued)

- **BogoMIPS:** 4600.01
- **Virtualization:** VT-x
- **L1d cache:** 32K
- **L1i cache:** 32K
- **L2 cache:** 1024K
- **L3 cache:** 25344K
- **NUMA node0 CPU(s):** 0-17

**Flags:**
- fpu, vme, de, pse, tsc, mce, cx8, apic, sep, mtrr, pge, mca, cmov, pat, pse36, cflush, dts, acpi, mmx, fxsr, sse, sse2, ss, ht, tm, pbe, syscall, nx, pdpe1gb, rdtsscp, lm, constant_tsc, art, arch_perfmon, pebs, bts, rep_good, nopl, xtopology, nonstop_tsc, aperf, mperf, 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, ept, invpcid_single, pln, pts, dtherm, 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, cqm, mpx, avx512f, avx512dq, rdseed, adx, smap, clflushopt, clwb, avx512cd, avx512bw, avx512vl, xsaveopt, xsavec, xgetbv1, cqm_llc, cqm_occup_llc, pku, ospke

---

```
From /proc/cpuinfo cache data
  cache size: 25344 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 16 17
  node 0 size: 191880 MB
  node 0 free: 184436 MB
  node distances:
      node 0
  0:  10

From /proc/meminfo
  MemTotal: 196485764 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)
Supermicro
SuperStorage 5029P-E1CTR12L (X11SPH-nCTF, Intel Xeon Gold 6140M)

SPECspeed2017_fp_base = 63.3
SPECspeed2017_fp_peak = 63.6

CPU2017 License: 001176
Test Date: Jul-2018

Test Sponsor: Supermicro
Hardware Availability: Jul-2017

Tested by: Supermicro
Software Availability: Mar-2018

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 Jul 5 17:06

SPEC is set to: /home/cpu2017

Filesystem Type Size Used Avail Use% Mounted on
/dev/nvme0n1p4 xfs 1.8T 62G 1.8T 4% /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)
Supermicro
SuperStorage 5029P-E1CTR12L (X11SPH-nCTF, Intel Xeon Gold 6140M)

SPEC CPU2017 Floating Point Speed Result

Copyright 2017-2018 Standard Performance Evaluation Corporation

SPECspeed2017_fp_base = 63.3
SPECspeed2017_fp_peak = 63.6

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

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

Compiler Version Notes (Continued)

-----------------------------------------------
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 607.cactuBSSN_s(base, peak)

--
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)
**Supermicro**
SuperStorage 5029P-E1CTR12L (X11SPH-nCTF, Intel Xeon Gold 6140M)

<table>
<thead>
<tr>
<th>SPECspeed2017_fp_base</th>
<th>63.3</th>
</tr>
</thead>
<tbody>
<tr>
<td>SPECspeed2017_fp_peak</td>
<td>63.6</td>
</tr>
</tbody>
</table>

### 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

(Continued on next page)
Baseline 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: basepeak = yes
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
-qopenmp -n ostandard-realloc-lhs

(Continued on next page)
### Peak Optimization Flags (Continued)

649.fotonik3d_s: Same as 603.bwaves_s

654.roms_s: basepeak = yes

Benchmarks using both Fortran and C:

621.wrf_s: basepeak = yes

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-1hs

628.pop2_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-1hs

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:


---

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.

Tested with SPEC CPU2017 v1.0.2 on 2018-07-05 10:36:12-0400.