## SPEC CPU® 2017 Floating Point Speed Result

### Supermicro

SuperServer 5019C-WR (X11SCW-F, Intel Pentium Gold G5400)

<table>
<thead>
<tr>
<th>SPECspeed®2017_fp_peak</th>
<th>SPECspeed®2017_fp_base</th>
</tr>
</thead>
<tbody>
<tr>
<td>14.4</td>
<td>13.3</td>
</tr>
</tbody>
</table>

**CPU2017 License:** 001176

**Test Date:** Oct-2019

**Test Sponsor:** Supermicro

**Hardware Availability:** Nov-2018

**Tested by:** Supermicro

**Software Availability:** Sep-2018

### Threads

<table>
<thead>
<tr>
<th>Test</th>
<th>threads</th>
<th>Time (s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>603.bwaves_s</td>
<td>2</td>
<td>16.4</td>
</tr>
<tr>
<td>607.cactuBSSN_s</td>
<td>2</td>
<td>10.4</td>
</tr>
<tr>
<td>619.lbm_s</td>
<td>2</td>
<td>13.8</td>
</tr>
<tr>
<td>621.wrf_s</td>
<td>2</td>
<td>8.32</td>
</tr>
<tr>
<td>627.cam4_s</td>
<td>2</td>
<td>16.1</td>
</tr>
<tr>
<td>628.pop2_s</td>
<td>2</td>
<td>13.4</td>
</tr>
<tr>
<td>638.imagick_s</td>
<td>2</td>
<td>4.54</td>
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<tr>
<td>644.nab_s</td>
<td>4</td>
<td>13.4</td>
</tr>
<tr>
<td>649.fotonik3d_s</td>
<td>2</td>
<td>10.7</td>
</tr>
<tr>
<td>654.roms_s</td>
<td>2</td>
<td>10.8</td>
</tr>
</tbody>
</table>

**SPECspeed®2017_fp_peak (14.4)**

**SPECspeed®2017_fp_base (13.3)**

### Hardware

**CPU Name:** Intel Pentium Gold G5400

**Max MHz:** 3700

**Nominal:** 3700

**Enabled:** 2 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:** 4 MB I+D on chip per core

**Other:** None

**Memory:** 64 GB (4 x 16 GB 2Rx8 PC4-2666V-E, running at 2400)

**Storage:** 1 x 200 GB SATA III SSD

**Other:** None

### Software

**OS:** SUSE Linux Enterprise Server 12 SP3 (x86_64)

**Kernel:** 4.4.114-94.11-default

**Compiler:** C/C++: Version 19.0.0.117 of Intel C/C++ Compiler for Linux;

**Fortran:** Version 19.0.0.117 of Intel Fortran Compiler for Linux

**Parallel:** Yes

**Firmware:** Version 1.0b released May-2019

**File System:** xfs

**System State:** Run level 3 (multi-user)

**Base Pointers:** 64-bit

**Peak Pointers:** 64-bit

**Other:** None

**Power Management:** --
**SPEC CPU®2017 Floating Point Speed Result**

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**Supermicro**

SuperServer 5019C-WR (X11SCW-F, Intel Pentium Gold G5400)

**SPECspeed®2017_fp_base** = 13.3  
**SPECspeed®2017_fp_peak** = 14.4

**CPU2017 License:** 001176  
**Test Date:** Oct-2019  
**Test Sponsor:** Supermicro  
**Hardware Availability:** Nov-2018  
**Tested by:** Supermicro  
**Software Availability:** Sep-2018

---

### Results Table

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Threads</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Seconds</th>
<th>Ratio</th>
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<tr>
<td>603.bwaves_s</td>
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**SPECspeed®2017_fp_base** = 13.3  
**SPECspeed®2017_fp_peak** = 14.4

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 i9-7900X 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

Sysinfo program /home/cpu2017/bin/sysinfo

Rev: r5974 of 2018-05-19 9bcede8f2999c33d61f64985e45859ea9

(Continued on next page)
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SuperServer 5019C-WR (X11SCW-F, Intel Pentium Gold G5400)

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<th>CPU2017 License:</th>
<th>001176</th>
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<td>Test Sponsor:</td>
<td>Supermicro</td>
</tr>
<tr>
<td>Tested by:</td>
<td>Supermicro</td>
</tr>
<tr>
<td>Test Date:</td>
<td>Oct-2019</td>
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</table>

### Platform Notes (Continued)

- running on linux-65nv Wed Oct 9 18:00:12 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](https://www.spec.org/cpu2017/Docs/config.html#sysinfo)

```
From /proc/cpuinfo
model name : Intel(R) Pentium(R) Gold G5400 CPU @ 3.70GHz
  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 : 2
  siblings : 4
  physical 0: cores 0 1

From lscpu:
Architectures: 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: 2
Core(s) per socket: 2
Socket(s): 1
NUMA node(s): 1
Vendor ID: GenuineIntel
CPU family: 6
Model: 158
Model name: Intel(R) Pentium(R) Gold G5400 CPU @ 3.70GHz
Stepping: 11
CPU MHz: 3700.002
CPU max MHz: 3700.0000
CPU min MHz: 800.0000
BogoMIPS: 7392.00
Virtualization: VT-x
L1d cache: 32K
L1i cache: 32K
L2 cache: 256K
L3 cache: 4096K
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
aperfmonf eagerfpu pni pclmulqdq dtes64 monitor ds_cpl vmx est tm2 ssse3 sdbg cx16
xtpr pdcm pcd pse4 lse4_1 sse4_2 x2apic movbe popcnt tsc_deadline_timer aes xsave
rdrand lahf_lm abm 3dnowprefetch arat epb invpcid_single pln pts dtherm hwp hwp_notify
```

(Continued on next page)
Supermicro
SuperServer 5019C-WR (X11SCW-F, Intel Pentium Gold G5400)

SPECspeed®2017_fp_base = 13.3
SPECspeed®2017_fp_peak = 14.4

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

Platform Notes (Continued)

```
hwp_act_window hwp_epp intel_pt rsb_ctxsw spec_ctrl retpoline kaiser tpr_shadow vnmi
flexpriority ept vpid fsqgsbase tsc_adjust smep erms invpcid mpx rdseed smap
clfushopt xsaveopt xsavec xgetbv1
```

```
/home/cpuinfo cache data
cache size : 4096 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: 64333 MB
node 0 free: 44171 MB
node distances:
node 0
0: 10

From /proc/meminfo
MemTotal: 65877980 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"

uname -a:
Linux linux-65nv 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

(Continued on next page)
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Tested by: Supermicro  
Hardware Availability: Nov-2018  
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Platform Notes (Continued)

run-level 3 Oct 8 14:12

SPEC is set to: /home/cpu2017

Filesystem Type Size Used Avail Use% Mounted on
/dev/sda3 xfs 145G 31G 114G 22% /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. 1.0b 05/16/2019
Memory:
4x Micron 18ADF2G72AZ-2G6H1R 16 GB 2 rank 2667, configured at 2400

(End of data from sysinfo program)

Compiler Version Notes

==============================================================================
| C               | 619.lbm_s(base, peak) 638.imagick_s(base, peak) 644.nab_s(base, peak) |
==============================================================================

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.

==============================================================================
| C++, C, Fortran | 607.cactuBSSN_s(base, peak) |
==============================================================================

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) 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.

==============================================================================
| Fortran | 603.bwaves_s(base, peak) 649.fotonik3d_s(base, peak) 654.roms_s(base, peak) |
==============================================================================

(Continued on next page)
Compiler Version Notes (Continued)

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

Fortran, C

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

Intel® Fortran Intel® 64 Compiler for applications running on Intel® 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

Base Portability Flags

603.bwaves_s: -DSPEC_LP64
607.cactusBSSN_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

(Continued on next page)
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Base Portability Flags (Continued)

654.roms_s: -DSPEC_LP64

Base Optimization Flags

C benchmarks:
-xSSE4.2 -ipo -O3 -no-prec-div -qopt-prefetch -ffinite-math-only
-qopt-mem-layout-trans=3 -qopenmp -DSPEC_OPENMP

Fortran benchmarks:
-DSPEC_OPENMP -xSSE4.2 -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:
-xSSE4.2 -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++:
-xSSE4.2 -ipo -O3 -no-prec-div -qopt-prefetch -ffinite-math-only
-qopt-mem-layout-trans=3 -qopenmp -DSPEC_OPENMP
-nostandard-realloc-lhs -align array32byte

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++:
icc -m64 icc -m64 -std=c11 ifort -m64
Supermicro
SuperServer 5019C-WR (X11SCW-F, Intel Pentium Gold G5400)

SPECspeed®2017_fp_base = 13.3
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CPU2017 License: 001176
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Tested by: Supermicro

Test Date: Oct-2019
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Peak Portability Flags
Same as Base Portability Flags

Peak Optimization Flags

C benchmarks:

619.lbm_s: basepeak = yes

638.imagick_s: -xSSE4.2 -ipo -O3 -no-prec-div -qopt-prefetch
-ffinite-math-only -qopt-mem-layout-trans=3 -qopenmp
-DSPEC_OPENMP

644.nab_s: Same as 638.imagick_s

Fortran benchmarks:

603.bwaves_s: -prof-gen(pass 1) -prof-use(pass 2) -DSPEC_SUPPRESS_OPENMP
-DSPEC_OPENMP -O2 -xSSE4.2 -qopt-prefetch -ipo -O3
-no-prec-div -ffinite-math-only -qopt-mem-layout-trans=3
-qopenmp -nostandard-realloc-lhs -align array32byte

649.fotonik3d_s: basepeak = yes

654.roms_s: -DSPEC_OPENMP -xSSE4.2 -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:

621.wrf_s: -prof-gen(pass 1) -prof-use(pass 2) -O2 -xSSE4.2
-qopt-prefetch -ipo -O3 -no-prec-div -ffinite-math-only
-qopt-mem-layout-trans=3 -DSPEC_SUPPRESS_OPENMP -qopenmp
-DSPEC_OPENMP -nostandard-realloc-lhs -align array32byte

627.cam4_s: -xSSE4.2 -ipo -O3 -no-prec-div -qopt-prefetch
-ffinite-math-only -qopt-mem-layout-trans=3 -qopenmp
-DSPEC_OPENMP -nostandard-realloc-lhs -align array32byte

628.pop2_s: Same as 621.wrf_s

Benchmarks using Fortran, C, and C++:

-xSSE4.2 -ipo -O3 -no-prec-div -qopt-prefetch -ffinite-math-only
-qopt-mem-layout-trans=3 -qopenmp -DSPEC_OPENMP
-nostandard-realloc-lhs -align array32byte
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<tr>
<th>Supermicro SuperServer 5019C-WR (X11SCW-F, Intel Pentium Gold G5400)</th>
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| Tested by:             | Supermicro                    |
| Test Date:             | Oct-2019                      |
| Hardware Availability: | Nov-2018                      |
| Software Availability: | Sep-2018                      |

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:


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