**Supermicro**

SuperServer 5019C-WR (X11SCW-F, Intel Pentium Gold G5500T)

<table>
<thead>
<tr>
<th>Hardware</th>
<th>Software</th>
</tr>
</thead>
<tbody>
<tr>
<td>CPU Name: Intel Pentium Gold G5500T</td>
<td>OS: SUSE Linux Enterprise Server 12 SP3 (x86_64)</td>
</tr>
<tr>
<td>Max MHz: 3200</td>
<td>Kernel 4.4.114-94.11-default</td>
</tr>
<tr>
<td>Nominal: 3200</td>
<td>Compiler: C/C++: Version 19.0.0.117 of Intel C/C++</td>
</tr>
<tr>
<td>Enabled: 2 cores, 1 chip, 2 threads/core</td>
<td>Compiler for Linux; Fortran: Version 19.0.0.117 of Intel Fortran</td>
</tr>
<tr>
<td>Orderable: 1 chip</td>
<td>Compiler for Linux</td>
</tr>
<tr>
<td>Cache L1: 32 KB I + 32 KB D on chip per core</td>
<td>Parallel: No</td>
</tr>
<tr>
<td>L2: 256 KB I+D on chip per core</td>
<td>Firmware: Version 1.0b released May-2019</td>
</tr>
<tr>
<td>L3: 4 MB I+D on chip per chip</td>
<td>File System: xfs</td>
</tr>
<tr>
<td>Other: None</td>
<td>System State: Run level 3 (multi-user)</td>
</tr>
<tr>
<td>Memory: 64 GB (4 x 16 GB 2Rx8 PC4-2666V-E, running at 2400)</td>
<td>Base Pointers: 64-bit</td>
</tr>
<tr>
<td>Storage: 1 x 200 GB SATA III SSD</td>
<td>Peak Pointers: 64-bit</td>
</tr>
<tr>
<td>Other: None</td>
<td>Other: None</td>
</tr>
<tr>
<td>Power Management: --</td>
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**SPEC CPU®2017 Floating Point Rate Result**

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

| SPECrate®2017_fp_peak = 14.1 | SPECrate®2017_fp_base = 13.8 |

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<tr>
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<th>Software Availability</th>
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<td>Supermicro</td>
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<td>Other: None</td>
<td>Power Management: --</td>
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Supernode
SuperServer 5019C-WR (X11SCW-F, Intel Pentium Gold G5500T)

SPECrate®2017_fp_base = 13.8
SPECrate®2017_fp_peak = 14.1

Results Table

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<th>Seconds</th>
<th>Ratio</th>
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<tr>
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<tr>
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<td>706</td>
<td>9.00</td>
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<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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 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)
SPEC CPU®2017 Floating Point Rate Result

Supermicro
SuperServer 5019C-WR (X11SCW-F , Intel Pentium Gold G5500T)

SPECrate®2017_fp_base = 13.8
SPECrate®2017_fppeak = 14.1

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

General Notes (Continued)
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-65nv Sun Oct  6 00:04:04 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) Pentium(R) Gold G5500T CPU @ 3.20GHz
  1 "physical id"s (chips)
  4 "processors"
core, 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:
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: 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 G5500T CPU @ 3.20GHz
Stepping: 11
CPU MHz: 3200.026
CPU max MHz: 3200.0000
CPU min MHz: 800.0000
BogoMIPS: 6383.97
Virtualization: VT-x
L1d cache: 32K
L1i cache: 32K

(Continued on next page)
Supermicro
SuperServer 5019C-WR (X11SCW-F, Intel Pentium Gold G5500T)

| SPECrate®2017_fp_base = 13.8 |
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CPU2017 License: 001176
Test Sponsor: Supermicro
Test Date: Oct-2019
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Software Availability: Sep-2018

Platform Notes (Continued)

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 art arch_perfmon pebs bts rep_good nopl xtopology nonstop_tsc
aperfmperf eagerfpu pni pclmulqdq dtes64 monitor ds_cpl vmx est tm2 ssse3 sdbg cx16
xtpr pdcm pcid sse4_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
hwp_act_window hwp_epp intel_pt rsb_ctxsw spec_ctrl retpoline kaiser tpr_shadow vmm
flexpriority ept vpid fsgsbase tsc_adjust smep erms invpcid mpx rdseed smap
clflushopt xsaveopt xsaves xgetbv1

/proc/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: 55540 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"

(Continued on next page)
Supermicro
SuperServer 5019C-WR (X11SCW-F, Intel Pentium Gold G5500T)

SPEC CPU®2017 Floating Point Rate Result

Copyright 2017-2019 Standard Performance Evaluation Corporation

SPECrate®2017_fp_base = 13.8
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Platform Notes (Continued)

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

run-level 3 Oct 5 14:56

SPEC is set to: /home/cpu2017

Filesystem Type Size Used Avail Use% Mounted on
/dev/sda3 xfs 145G 21G 124G 15% /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
    | 519.lbm_r(base, peak) 538.imagick_r(base, peak)
    | 544.nab_r(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++
    | 508.namd_r(base, peak) 510.parest_r(base, peak)
Intel(R) C++ Intel(R) 64 Compiler for applications running on Intel(R) 64,
Version 19.0.0.117 Build 20180804
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========================================================================================================

(Continued on next page)
Supermicro
SuperServer 5019C-WR (X11SCW-F, Intel Pentium Gold G5500T)

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

---

Compiler Version Notes (Continued)

C++, C |

| 511.povray_r(base, peak) 526.blender_r(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 |

| 507.cactuBSSN_r(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.

---

Fortran |

| 503.bwaves_r(base, peak) 549.fotonik3d_r(base, peak) |

---

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, C |

| 521.wrf_r(base, peak) 527.cam4_r(base, peak) |

---

Intel(R) Fortran Intel(R) 64 Compiler for applications running on Intel(R) 64,
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Supermicro
SPEC CPU®2017 Floating Point Rate Result

Copyright 2017-2019 Standard Performance Evaluation Corporation

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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

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

C++ benchmarks:
-xSSE4.2 -ipo -O3 -no-prec-div -qopt-prefetch -ffinite-math-only

(Continued on next page)
## SPEC CPU®2017 Floating Point Rate Result

### Supermicro
SuperServer 5019C-WR (X11SCW-F, Intel Pentium Gold G5500T)

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### Base Optimization Flags (Continued)

C++ benchmarks (continued):
- `-qopt-mem-layout-trans=3`

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

Benchmarks using both C and C++:
- `-xSSE4.2 -ipo -O3 -no-prec-div -qopt-prefetch -ffinite-math-only`
- `-qopt-mem-layout-trans=3`

Benchmarks using Fortran, C, and C++:
- `-xSSE4.2 -ipo -O3 -no-prec-div -qopt-prefetch -ffinite-math-only`
- `-qopt-mem-layout-trans=3 -auto -nostandard-realloc-lhs`
- `-align array32byte`

### Peak 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 CPU®2017 Floating Point Rate Result

Supermicro
SuperServer 5019C-WR (X11SCW-F, Intel Pentium Gold G5500T)

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

### Peak Portability Flags

Same as Base Portability Flags

### Peak Optimization Flags

**C benchmarks:**

519.lbm_r: -prof-gen(pass 1) -prof-use(pass 2) -ipo -xSSE4.2 -O3 -no-prec-div -qopt-prefetch -ffinite-math-only -qopt-mem-layout-trans=3  
538.imagick_r: -xSSE4.2 -ipo -O3 -no-prec-div -qopt-prefetch -ffinite-math-only -qopt-mem-layout-trans=3  
544.nab_r: Same as 538.imagick_r

**C++ benchmarks:**

508.namd_r: -prof-gen(pass 1) -prof-use(pass 2) -ipo -xSSE4.2 -O3 -no-prec-div -qopt-prefetch -ffinite-math-only -qopt-mem-layout-trans=3  
510.parest_r: -xSSE4.2 -ipo -O3 -no-prec-div -qopt-prefetch -ffinite-math-only -qopt-mem-layout-trans=3

**Fortran benchmarks:**

503.bwaves_r: -xSSE4.2 -ipo -O3 -no-prec-div -qopt-prefetch -ffinite-math-only -qopt-mem-layout-trans=3 -auto -nostandard-realloc-lhs -align array32byte  
549.fotonik3d_r: basepeak = yes  
554.roms_r: -prof-gen(pass 1) -prof-use(pass 2) -ipo -xSSE4.2 -O3 -no-prec-div -qopt-prefetch -ffinite-math-only -qopt-mem-layout-trans=3 -auto -nostandard-realloc-lhs -align array32byte

**Benchmarks using both Fortran and C:**

- -prof-gen(pass 1) -prof-use(pass 2) -ipo -xSSE4.2 -O3 -no-prec-div -qopt-prefetch -ffinite-math-only -qopt-mem-layout-trans=3 -auto -nostandard-realloc-lhs -align array32byte

**Benchmarks using both C and C++:**

(Continued on next page)
**SPEC CPU®2017 Floating Point Rate Result**

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Supermicro
SuperServer 5019C-WR (X11SCW-F, Intel Pentium Gold G5500T)  

<table>
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<th>SPECrate®2017_fp_peak = 14.1</th>
<th>SPECrate®2017_fp_base = 13.8</th>
</tr>
</thead>
</table>

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

Peak Optimization Flags (Continued)

511.povray_r -prof-gen(pass 1) -prof-use(pass 2) -ipo -xSSE4.2 -O3  
-no-prec-div -qopt-prefetch -ffinite-math-only  
-qopt-mem-layout-trans=3

526.blender_r -xSSE4.2 -ipo -O3 -no-prec-div -qopt-prefetch  
-ffinite-math-only -qopt-mem-layout-trans=3

Benchmarks using Fortran, C, and C++:
- -xSSE4.2 -ipo -O3 -no-prec-div -qopt-prefetch -ffinite-math-only  
- qopt-mem-layout-trans=3 -auto -nostandard-realloc-lhs  
- align array32byte

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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