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

<table>
<thead>
<tr>
<th>Software</th>
<th>Hardware</th>
</tr>
</thead>
<tbody>
<tr>
<td>OS: SUSE Linux Enterprise Server 12 SP3 (x86_64)</td>
<td>CPU Name: Intel Pentium Gold G5400</td>
</tr>
<tr>
<td>Compiler: C/C++: Version 19.0.0.117 of Intel C/C++ Compiler for Linux</td>
<td>Max MHz: 3700</td>
</tr>
<tr>
<td>Fortran: Version 19.0.0.117 of Intel Fortran Compiler for Linux</td>
<td>Nominal: 3700</td>
</tr>
<tr>
<td>Firmware: Version 1.0b released May-2019</td>
<td>Enabled: 2 cores, 1 chip, 2 threads/core</td>
</tr>
<tr>
<td>File System: xfs</td>
<td>Orderable: 1 chip</td>
</tr>
<tr>
<td>System State: Run level 3 (multi-user)</td>
<td>Cache L1: 32 KB I + 32 KB D on chip per core</td>
</tr>
<tr>
<td>Base Pointers: 64-bit</td>
<td>L2: 256 KB I+D on chip per core</td>
</tr>
<tr>
<td>Peak Pointers: 32/64-bit</td>
<td>L3: 4 MB I+D on chip per chip</td>
</tr>
<tr>
<td>Other: jemalloc memory allocator V5.0.1</td>
<td>Other: None</td>
</tr>
<tr>
<td>Power Management: --</td>
<td>Memory: 64 GB (4 x 16 GB 2Rx8 PC4-2666V-E, running at 2400)</td>
</tr>
</tbody>
</table>
| Storage: 1 x 200 GB SATA III SSD | **Test Sponsor:** Supermicro  
**Hardware Availability:** Nov-2018  
**Software Availability:** Sep-2018  
**Test Date:** Oct-2019

### SPEC CPU 2017 Integer Rate Result

<table>
<thead>
<tr>
<th>SPECrate 2017 int_base</th>
<th>SPECrate 2017 int_peak</th>
</tr>
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<tbody>
<tr>
<td>12.6</td>
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<table>
<thead>
<tr>
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<tr>
<th>SPECrate 2017 int_base</th>
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<tbody>
<tr>
<td>12.6</td>
<td>13.5</td>
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**Copies**

<table>
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<tr>
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<td>9.14</td>
</tr>
<tr>
<td>520.omnetpp_r</td>
<td>4</td>
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<td>18.4</td>
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<td>523.xalancbmk_r</td>
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<td>531.deepsjeng_r</td>
<td>4</td>
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<td>21.3</td>
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<tr>
<td>541.leela_r</td>
<td>4</td>
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<tr>
<td>557.xz_r</td>
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</tbody>
</table>

---

**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 chip  
- **Other:** None  
- **Memory:** 64 GB (4 x 16 GB 2Rx8 PC4-2666V-E, running at 2400)  
- **Storage:** 1 x 200 GB SATA III SSD  
- **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:** No  
  - **Firmware:** Version 1.0b released May-2019  
  - **File System:** xfs  
  - **System State:** Run level 3 (multi-user)  
  - **Base Pointers:** 64-bit  
  - **Peak Pointers:** 32/64-bit  
  - **Other:** jemalloc memory allocator V5.0.1  
  - **Power Management:** --
Supermicro
SuperServer 5019C-WR (X11SCW-F, Intel Pentium Gold G5400)

SPECrate®2017_int_base = 12.6
SPECrate®2017_int_peak = 13.5

Results Table

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<th>Seconds</th>
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<td>525</td>
<td>8.22</td>
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<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) 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.
jemalloc, a general purpose malloc implementation

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

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

<table>
<thead>
<tr>
<th>SPECrate®2017_int_base = 12.6</th>
<th>Test Date: Oct-2019</th>
</tr>
</thead>
<tbody>
<tr>
<td>SPECrate®2017_int_peak = 13.5</td>
<td>Hardware Availability: Nov-2018</td>
</tr>
</tbody>
</table>

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

#### General Notes (Continued)

built with the RedHat Enterprise 7.5, and the system compiler gcc 4.8.5

#### Platform Notes

Sysinfo program /home/cpu2017/bin/sysinfo
Rev: r5974 of 2018-05-19 9bcde8f2999c33d61f64985e45859ea9
running on linux-65nv Tue Oct 8 14:27:34 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 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:

- 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 G5400 CPU @ 3.70GHz
- Stepping: 11
- CPU MHz: 3699.995
- 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

(Continued on next page)
## Platform Notes (Continued)

```
L3 cache: 4096K
NUMA node0 CPU(s): 0-3
Flags: fpu vme de pse tsc msr pae 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_ctxaw spec_ctrl retpoline kaiser tpr_shadow vmx
       flexpriority ept vpid fsgsbase tsc_adjust smep erms invpcid mpx rdseed smap
       clflushopt xsaveopt xsavec 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: 63853 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:
```

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

SPEC CPU®2017 Integer Rate Result
Copyright 2017-2019 Standard Performance Evaluation Corporation

SPECrate®2017_int_base = 12.6
SPECrate®2017_int_peak = 13.5

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

Platform Notes (Continued)
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 8 14:12
SPEC is set to: /home/cpu2017

Filesystem Type Size Used Avail Use% Mounted on
/dev/sda3 xfs 145G 14G 131G 10% /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       | 502.gcc_r(peak)
-----------------------------------------------------------------------------
Intel(R) C Intel(R) 64 Compiler for applications running on IA-32, Version
19.0.0.117 Build 20180804
Copyright (C) 1985-2018 Intel Corporation. All rights reserved.
-----------------------------------------------------------------------------
C       | 500.perlbench_r(base, peak) 502.gcc_r(base) 505.mcf_r(base, peak)
       | 525.x264_r(base, peak) 557.xz_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       | 502.gcc_r(peak)
(Continued on next page)
SPEC CPU®2017 Integer Rate Result

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

| SPECrate®2017_int_base = 12.6 |
| SPECrate®2017_int_peak = 13.5 |

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

Test Date: Oct-2019
Hardware Availability: Nov-2018
Software Availability: Sep-2018

Compiler Version Notes (Continued)

| Intel(R) C Intel(R) 64 Compiler for applications running on IA-32, Version 19.0.0.117 Build 20180804 |
| Copyright (C) 1985-2018 Intel Corporation. All rights reserved. |

| C       | 500.perlbench_r(base, peak) 502.gcc_r(base) 505.mcf_r(base, peak) |
|         | 525.x264_r(base, peak) 557.xz_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++     | 523.xalancbmk_r(peak) |

| Intel(R) C++ Intel(R) 64 Compiler for applications running on IA-32, Version 19.0.0.117 Build 20180804 |
| Copyright (C) 1985-2018 Intel Corporation. All rights reserved. |

| C++     | 520.omnetpp_r(base, peak) 523.xalancbmk_r(base) |
|         | 531.deepsjeng_r(base, peak) 541.leela_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++     | 523.xalancbmk_r(peak) |

| Intel(R) C++ Intel(R) 64 Compiler for applications running on IA-32, Version 19.0.0.117 Build 20180804 |
| Copyright (C) 1985-2018 Intel Corporation. All rights reserved. |

| C++     | 520.omnetpp_r(base, peak) 523.xalancbmk_r(base) |
|         | 531.deepsjeng_r(base, peak) 541.leela_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. |

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

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

SPECrater®2017_int_base = 12.6
SPECrater®2017_int_peak = 13.5

Test Date: Oct-2019
Hardware Availability: Nov-2018
Software Availability: Sep-2018

Compiler Version Notes (Continued)

==============================================================================
Fortran | 548.exchange2_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.
-----------------------------------------------------------------------------

Base Compiler Invocation

C benchmarks:
icc -m64 -std=c11

C++ benchmarks:
icpc -m64

Fortran benchmarks:
ifort -m64

Base Portability Flags

500.perlbench_r: -DSPEC_LP64 -DSPEC_LINUX_X64
502.gcc_r: -DSPEC_LP64
505.mcf_r: -DSPEC_LP64
520.omnetpp_r: -DSPEC_LP64
523.xalancbmk_r: -DSPEC_LP64 -DSPEC_LINUX
525.x264_r: -DSPEC_LP64
531.deepsjeng_r: -DSPEC_LP64
541.leela_r: -DSPEC_LP64
548.exchange2_r: -DSPEC_LP64
557.xz_r: -DSPEC_LP64

Base Optimization Flags

C benchmarks:
-W1, -z, muldefs -xSSE4.2 -ipo -O3 -no-prec-div
-qopt-mem-layout-trans=3 -L/usr/local/je5.0.1-64/lib -ljemalloc

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

Copyright 2017-2019 Standard Performance Evaluation Corporation

SPECrate®2017_int_base = 12.6
SPECrate®2017_int_peak = 13.5

Base Optimization Flags (Continued)

C++ benchmarks:
-Wl,-z,muldefs -xSSE4.2 -ipo -O3 -no-prec-div
-qopt-mem-layout-trans=3 -L/usr/local/je5.0.1-64/lib -ljemalloc

Fortran benchmarks:
-Wl,-z,muldefs -xSSE4.2 -ipo -O3 -no-prec-div
-qopt-mem-layout-trans=3 -nostandard-realloc-lhs -align array32byte
-L/usr/local/je5.0.1-64/lib -ljemalloc

Peak Compiler Invocation

C benchmarks (except as noted below):
icc -m64 -std=c11

502.gcc_r: icc -m32 -std=c11 -L/usr/local/IntelCompiler19/compilers_and_libraries_2019.0.117/linux/compiler/lib/ia32_lin

C++ benchmarks (except as noted below):
icpc -m64

523.xalancbmk_r: icpc -m32 -L/usr/local/IntelCompiler19/compilers_and_libraries_2019.0.117/linux/compiler/lib/ia32_lin

Fortran benchmarks:
ifort -m64

Peak Portability Flags

500.perlbench_r: -DSPEC_LP64 -DSPEC_LINUX_X64
502.gcc_r: -D_FILE_OFFSET_BITS=64
505.mcf_r: -DSPEC_LP64
520.omnetpp_r: -DSPEC_LP64
523.xalancbmk_r: -D_FILE_OFFSET_BITS=64 -DSPEC_LINUX
525.x264_r: -DSPEC_LP64
531.deepsjeng_r: -DSPEC_LP64
541.leela_r: -DSPEC_LP64
548.exchange2_r: -DSPEC_LP64
557.xz_r: -DSPEC_LP64
## SPEC CPU®2017 Integer Rate Result

### Supermicro

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

<table>
<thead>
<tr>
<th>CPU2017 License</th>
<th>Test Sponsor</th>
<th>Tested by</th>
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<tr>
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<tr>
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### Peak Optimization Flags

#### C benchmarks:

- **500.perlbench_r**: `-Wl,-z,muldefs -prof-gen(pass 1) -prof-use(pass 2) -ipo -xSSE4.2 -O3 -no-prec-div -qopt-mem-layout-trans=3 -fno-strict-overflow -L/usr/local/je5.0.1-64/lib -ljemalloc
- **502.gcc_r**: `-Wl,-z,muldefs -prof-gen(pass 1) -prof-use(pass 2) -ipo -xSSE4.2 -O3 -no-prec-div -qopt-mem-layout-trans=3 -L/usr/local/je5.0.1-32/lib -ljemalloc
- **505.mcf_r**: `-Wl,-z,muldefs -xSSE4.2 -ipo -O3 -no-prec-div -qopt-mem-layout-trans=3 -L/usr/local/je5.0.1-64/lib -ljemalloc
- **525.x264_r**: `-Wl,-z,muldefs -xSSE4.2 -ipo -O3 -no-prec-div -qopt-mem-layout-trans=3 -fno-alias -L/usr/local/je5.0.1-64/lib -ljemalloc
- **557.xz_r**: `basepeak = yes`

#### C++ benchmarks:

- **520.omnetpp_r**: `-Wl,-z,muldefs -prof-gen(pass 1) -prof-use(pass 2) -ipo -xSSE4.2 -O3 -no-prec-div -qopt-mem-layout-trans=3 -L/usr/local/je5.0.1-64/lib -ljemalloc
- **523.xalancbmk_r**: `-Wl,-z,muldefs -prof-gen(pass 1) -prof-use(pass 2) -ipo -xSSE4.2 -O3 -no-prec-div -qopt-mem-layout-trans=3 -L/usr/local/je5.0.1-32/lib -ljemalloc
- **531.deepsjeng_r**: `Same as 520.omnetpp_r`
- **541.leela_r**: `basepeak = yes`

#### Fortran benchmarks:

- `-Wl,-z,muldefs -xSSE4.2 -ipo -O3 -no-prec-div -qopt-mem-layout-trans=3 -nostandard-realloc-lhs -align array32byte -L/usr/local/je5.0.1-64/lib -ljemalloc`

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

# SPEC CPU®2017 Integer Rate Result

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

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


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