**SPEC® CPU2017 Integer Speed Result**

**Supermicro**

SuperStorage 5049P-E1CR45H (X11SPL-F, Intel Xeon Silver 4108)

<table>
<thead>
<tr>
<th>SPECspeed2017_int_base</th>
<th>SPECspeed2017_int_peak</th>
</tr>
</thead>
<tbody>
<tr>
<td>6.64</td>
<td>6.83</td>
</tr>
</tbody>
</table>

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

### Hardware

- **CPU Name:** Intel Xeon Silver 4108  
- **Max MHz.:** 3000  
- **Nominal:** 1800  
- **Enabled:** 8 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:** 11 MB I+D on chip per chip  
- **Other:** None  
- **Memory:** 192 GB (6 x 32 GB 2Rx4 PC4-2666V-R, running at 2400)  
- **Storage:** 1 x 200 GB SATA III SSD  
- **Other:** None

### Software

- **OS:** SUSE Linux Enterprise Server 12 SP3 (x86_64)  
- **Compiler:** C/C++: Version 18.0.2.199 of Intel C/C++  
- **Compiler for Linux:** Fortran: Version 18.0.2.199 of Intel Fortran  
- **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:** 32/64-bit  
- **Other:** jemalloc memory allocator library V5.0.1

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Threads</th>
<th>SPECspeed2017_int_base</th>
<th>SPECspeed2017_int_peak</th>
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<tbody>
<tr>
<td>perlbench</td>
<td>8</td>
<td>5.74</td>
<td>7.24</td>
</tr>
<tr>
<td>gcc</td>
<td>8</td>
<td>7.58</td>
<td>9.39</td>
</tr>
<tr>
<td>mcf</td>
<td>8</td>
<td>4.55</td>
<td>9.41</td>
</tr>
<tr>
<td>omnetpp</td>
<td>8</td>
<td></td>
<td></td>
</tr>
<tr>
<td>xalancbmk</td>
<td>8</td>
<td>7.61</td>
<td>9.20</td>
</tr>
<tr>
<td>x264</td>
<td>8</td>
<td>4.32</td>
<td>8.07</td>
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<tr>
<td>deepsjeng</td>
<td>8</td>
<td></td>
<td></td>
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<tr>
<td>leela</td>
<td>8</td>
<td>3.52</td>
<td>10.7</td>
</tr>
<tr>
<td>exchange2</td>
<td>8</td>
<td></td>
<td></td>
</tr>
<tr>
<td>xz</td>
<td>8</td>
<td>9.70</td>
<td>10.9</td>
</tr>
</tbody>
</table>

---

**Threads**

- 0  1.00  2.00  3.00  4.00  5.00  6.00  7.00  8.00  9.00  10.0  11.0
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SuperStorage 5049P-E1CR45H (X11SPL-F, Intel Xeon Silver 4108)

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SPECspeed2017_int_base = 6.64
SPECspeed2017_int_peak = 6.83

Results Table

<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>
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<th>Seconds</th>
<th>Ratio</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Seconds</th>
<th>Ratio</th>
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<tbody>
<tr>
<td>600.perlbench_s</td>
<td>8</td>
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<td>4.91</td>
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<td>5.74</td>
<td>307</td>
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<td>602.gcc_s</td>
<td>8</td>
<td>550</td>
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<td>552</td>
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<tr>
<td>620.omnetpp_s</td>
<td>8</td>
<td>360</td>
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<td>623.xalanchmk_s</td>
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<td>4.32</td>
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<td>4.31</td>
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<td>4.31</td>
<td>332</td>
<td>4.32</td>
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<tr>
<td>641.leela_s</td>
<td>8</td>
<td>485</td>
<td>3.52</td>
<td>485</td>
<td>3.52</td>
<td>487</td>
<td>3.50</td>
<td>8</td>
<td>485</td>
<td>3.52</td>
<td>485</td>
<td>3.52</td>
<td>487</td>
<td>3.50</td>
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<tr>
<td>648.exchange2_s</td>
<td>8</td>
<td>276</td>
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<td>270</td>
<td>10.9</td>
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<td>271</td>
<td>10.8</td>
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</tbody>
</table>

SPECspeed2017_int_base = 6.64
SPECspeed2017_int_peak = 6.83

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,scatter"
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 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

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 built with the Redhat Enterprise 7.5, and the system compiler gcc 4.8.5
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**Test Date:** Sep-2018  
**Test Sponsor:** Supermicro  
**Hardware Availability:** Jul-2017  
**Tested by:** Supermicro  
**Software Availability:** Mar-2018  

**Platform Notes**

BIOS Settings:
- Hyper-Threading [ALL] = Disable
- LLC dead line alloc = Disable
- Patrol Scrub = Disable

Sysinfo program /home/cpu2017/bin/sysinfo  
Rev: r5974 of 2018-05-19 9bcde8f2999c33d61f64985e45859ea9  
runtime on linux-52ma Thu Sep 13 18:53:21 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) Silver 4108 CPU @ 1.80GHz  
- 1 "physical id"s (chips)  
- 8 "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: 8  
  - siblings: 8  
  - physical 0: cores 0 1 2 3 4 5 6 7

From lscpu:  
- Architecture: x86_64  
- CPU op-mode(s): 32-bit, 64-bit  
- Byte Order: Little Endian  
- CPU(s): 8  
- On-line CPU(s) list: 0-7  
- Thread(s) per core: 1  
- Core(s) per socket: 8  
- Socket(s): 1  
- NUMA node(s): 1  
- Vendor ID: GenuineIntel  
- CPU family: 6  
- Model: 85  
- Model name: Intel(R) Xeon(R) Silver 4108 CPU @ 1.80GHz  
- Stepping: 4  
- CPU MHz: 1800.001  
- BogoMIPS: 3600.00  
- Virtualization: VT-x  
- L1d cache: 32K  
- L1i cache: 32K  
- L2 cache: 1024K  
- L3 cache: 11264K  
- NUMA node0 CPU(s): 0-7  
- 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  

(Continued on next page)
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CPU2017 License: 001176
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Platform Notes (Continued)

```
lm constant_tsc art arch_perfmon pebs bts rep_good nopl xtopology nonstop_tsc
aperfmpref eagerfpu pni pclmulqdq dtes64 monitor ds_cpl vmx smx est tm2 ssse3 sdbg
fma cx16 xpr pdcm pcid dca sse4_1 sse4_2 x2apic movbe popcnt tsc_deadline_timer aes
xsave avx f16c rdrand lahf_lm abm 3dnowprefetch ida arat epb invpcid_single pln pts
dtherm hwp_epp intel_pt rsb_ctxsw spec_ctrl retpoline kaiser tpr_shadow vmx
flexpriority ept vtdfs base tsc_adjust bmi1 hle avx2 smep bmi2 3ms invpcid rtm
cqm mpx avx512f avx512dq rdseed adx smap clflushopt clwb avx512cd avx512bw avx512vl
xsaveopt xsavec xgetbv1 cqm_llc cqm_occup_llc pku ospke
```

```
/proccpuinfo cache data
  cache size: 11264 KB

From numactl --hardware WARNING: a numactl 'node' might or might not correspond to a
cartical chip.
  available: 1 nodes (0)
    node 0 cpus: 0 1 2 3 4 5 6 7
    node 0 size: 192077 MB
    node 0 free: 191395 MB
    node distances:
      node 0
        0: 10

From /proc/meminfo
  MemTotal: 196687252 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-52ma 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
```

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

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 Sep 13 15:54

SPEC is set to: /home/cpu2017

Filesystem | Type | Size  | Used | Avail | Use%  | Mounted on |
------------|------|-------|------|-------|-------|------------|
/dev/sda4   | xfs  | 145G  | 17G  | 128G  | 12%   | /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 06/15/2018
- Memory:
  - 2x NO DIMM NO DIMM
  - 6x Samsung M393A4K40BB2-CTD 32 GB 2 rank 2666, configured at 2400

(End of data from sysinfo program)

**Compiler Version Notes**

```
CC  600.perlibench_s(base) 602.gcc_s(base) 605.mcf_s(base) 625.x264_s(base, peak) 657.xz_s(base)
```  
```
icc (ICC) 18.0.2 20180210  
Copyright (C) 1985-2018 Intel Corporation. All rights reserved.
```  
```
CC  600.perlibench_s(peak) 602.gcc_s(peak) 605.mcf_s(peak) 657.xz_s(peak)
```  
```
icc (ICC) 18.0.2 20180210  
Copyright (C) 1985-2018 Intel Corporation. All rights reserved.
```  
```
CXXC 620.omnetpp_s(base) 623.xalancbmk_s(base) 631.deepsjeng_s(base) 641.leeja_s(base)
```  
```
icpc (ICC) 18.0.2 20180210  
Copyright (C) 1985-2018 Intel Corporation. All rights reserved.
```
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Compiler Version Notes (Continued)

CXXC 620.omnetpp_s(peak) 623.xalancbmk_s(peak) 631.deepsjeng_s(peak)
641.leela_s(peak)

icpc (ICC) 18.0.2 20180210
Copyright (C) 1985-2018 Intel Corporation. All rights reserved.

FC 648.exchange2_s(base, peak)

ifort (IFORT) 18.0.2 20180210
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

600.perlbench_s: -DSPEC_LP64 -DSPEC_LINUX_X64
602.gcc_s: -DSPEC_LP64
605.mcf_s: -DSPEC_LP64
620.omnetpp_s: -DSPEC_LP64
623.xalancbmk_s: -DSPEC_LP64 -DSPEC_LINUX
625.x264_s: -DSPEC_LP64
631.deepsjeng_s: -DSPEC_LP64
641.leela_s: -DSPEC_LP64
648.exchange2_s: -DSPEC_LP64
657.xz_s: -DSPEC_LP64
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<td>Mar-2018</td>
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</tbody>
</table>

**Base Optimization Flags**

C benchmarks:
- `-Wl,-z,muldefs` `-xCORE-AVX512` `-ipo` `-O3` `-no-prec-div`
- `-qopt-mem-layout-trans=3` `-qopenmp` `-DSPEC_OPENMP`
- `-L/usr/local/je5.0.1-64/lib `-ljemalloc`

C++ benchmarks:
- `-Wl,-z,muldefs` `-xCORE-AVX512` `-ipo` `-O3` `-no-prec-div`
- `-qopt-mem-layout-trans=3` `-L/usr/local/je5.0.1-64/lib `-ljemalloc`

Fortran benchmarks:
- `-Wl,-z,muldefs` `-xCORE-AVX512` `-ipo` `-O3` `-no-prec-div`
- `-qopt-mem-layout-trans=3` `-nostandard-realloc-lhs`
- `-L/usr/local/je5.0.1-64/lib `-ljemalloc`

**Peak Compiler Invocation**

C benchmarks:
- `icc` `-m64` `-std=c11`

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

623.xalancbmk_s: `icpc` `-m32` `-L/home/prasadj/specdev/IC18u2_Internal/lin_18_0_20180210/compiler/lib/ia32_lin`

Fortran benchmarks:
- `ifort` `-m64`

**Peak Portability Flags**

600.perlbench_s: `-DSPEC_LP64` `-DSPEC_LINUX_X64`
602.gcc_s: `-DSPEC_LP64`
605.mcf_s: `-DSPEC_LP64`
620.omnetpp_s: `-DSPEC_LP64`
623.xalancbmk_s: `-D_FILE_OFFSET_BITS=64` `-DSPEC_LINUX`
625.x264_s: `-DSPEC_LP64`
631.deepsjeng_s: `-DSPEC_LP64`
641.leela_s: `-DSPEC_LP64`
648.exchange2_s: `-DSPEC_LP64`
657.xz_s: `-DSPEC_LP64`
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Peak Optimization Flags

C benchmarks:

600.perlbench_s: -Wl,-z,muldefs -prof-gen(pass 1) -prof-use(pass 2) -O2
-xCORE-AVX512 -qopt-prefetch -ipo -O3
-qopt-mem-layout-trans=3 -no-prec-div
-DSPEC_SUPPRESS_OPENMP -qopenmp -DSPEC_OPENMP
-fno-strict-overflow -L/usr/local/je5.0.1-64/lib
-ljemalloc

602.gcc_s: -Wl,-z,muldefs -prof-gen(pass 1) -prof-use(pass 2) -O2
-xCORE-AVX512 -qopt-prefetch -ipo -O3
-qopt-mem-layout-trans=3 -no-prec-div
-DSPEC_SUPPRESS_OPENMP -qopenmp -DSPEC_OPENMP
-L/usr/local/je5.0.1-64/lib -ljemalloc

605.mcf_s: -Wl,-z,muldefs -prof-gen(pass 1) -prof-use(pass 2) -ipo
-xCORE-AVX512 -O3 -no-prec-div -qopt-prefetch
-qopt-mem-layout-trans=3 -DSPEC_SUPPRESS_OPENMP -qopenmp
-DSPEC_OPENMP -L/usr/local/je5.0.1-64/lib -ljemalloc

625.x264_s: basepeak = yes

657.xz_s: Same as 602.gcc_s

C++ benchmarks:

620.omnetpp_s: basepeak = yes

623.xalancbmk_s: -Wl,-z,muldefs -prof-gen(pass 1) -prof-use(pass 2) -ipo
-xCORE-AVX512 -O3 -no-prec-div -qopt-prefetch
-qopt-mem-layout-trans=3 -DSPEC_SUPPRESS_OPENMP -qopenmp
-DSPEC_OPENMP -L/usr/local/je5.0.1-32/lib -ljemalloc

631.deepsjeng_s: basepeak = yes

641.leela_s: basepeak = yes

Fortran benchmarks:

-Wl,-z,muldefs -xCORE-AVX512 -ipo -O3 -no-prec-div -qopt-prefetch
-qopt-mem-layout-trans=3 -nostandard-realloc-lhs
-L/usr/local/je5.0.1-64/lib -ljemalloc

The flags files that were used to format this result can be browsed at
Supermicro
SuperStorage 5049P-E1CR45H (X11SPL-F, Intel Xeon Silver 4108)  

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Test Date: Sep-2018  
Hardware Availability: Jul-2017  
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You can also download the XML flags sources by saving the following links:
http://www.spec.org/cpu2017/flags/Intel-ic18.0-official-linux64.2017-12-21.xml
http://www.spec.org/cpu2017/flags/Supermicro-Platform-Settings-V1.2-SKL-revD.xml

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For questions about this result, please contact the tester. For other inquiries, please contact info@spec.org.

Tested with SPEC CPU2017 v1.0.5 on 2018-09-13 06:53:20-0400.  
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