# SPEC® CPU2017 Integer Rate Result

## Supermicro

SuperStorage 5049P-E1CR45H (X11SPL-F, Intel Xeon Platinum 8153)

<table>
<thead>
<tr>
<th>SPECrate2017_int_base</th>
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</tr>
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<tbody>
<tr>
<td>69.7</td>
<td>73.9</td>
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</table>

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

### Hardware

**CPU Name:** Intel Xeon Platinum 8153  
**Max MHz.:** 2800  
**Nominal:** 2000  
**Enabled:** 16 cores, 1 chip, 2 threads/core  
**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:** 22 MB I+D on chip per chip  
**Other:** None  
**Memory:** 192 GB (6 x 32 GB 2Rx4 PC4-2666V-R)  
**Storage:** 1 x 2 TB SATA III, 7200 RPM  
**Other:** None

### Software

**OS:** SUSE Linux Enterprise Server 12 SP3  
**Compiler:** C/C++: Version 18.0.2.199 of Intel C/C++  
**Compiler:** Fortran: Version 18.0.2.199 of Intel Fortran  
**Firmware:** Supermicro BIOS version 2.0b released Feb-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

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<thead>
<tr>
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**Test Date:** Jun-2018  
**Hardware Availability:** Jul-2017  
**Software Availability:** Mar-2018
Results Table

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</table>

Submit Notes

The numactl mechanism was used to bind copies to processors. The config file option 'submit' was used to generate numactl 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:

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
Filesysten page cache synced and cleared with:
sync; echo 3>/proc/sys/vm/drop_caches
runcpu command invoked through numactl i.e.:
numactl --interleave=all runcpu <etc>

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)

(Continued on next page)
General Notes (Continued)

is mitigated in the system as tested and documented.
Yes: The test sponsor attests, as of date of publication, that CVE-2017-5753 (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

BIOS Settings:
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
SNC = Enable
XPT Prefetch = Enable
Stale AtoS = Enable
LLC dead line alloc = Disable
IMC Interleaving = 1-way Interleave
SDDC Plus One = Disable
ADDDC Sparing = Disable
Patrol Scrub = Disable
Sysinfo program /home/cpu2017/bin/sysinfo
Rev: r5797 of 2017-06-14 96c45e4568ad54c135fd618b0c091c0f
running on linux-9m9c Mon Jun 25 06:16:14 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) Platinum 8153 CPU @ 2.00GHz
  1 "physical id"s (chips)
  32 "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 : 16
siblings : 32
physical 0: cores 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15

From lscpu:
Architecture: x86_64
CPU op-mode(s): 32-bit, 64-bit
Byte Order: Little Endian
CPU(s): 32
On-line CPU(s) list: 0-31
## SPEC CPU2017 Integer Rate Result

### Hardware Details

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- **Test Sponsor:** Supermicro
- **Test Date:** Jun-2018
- **Tested by:** Supermicro
- **Software Availability:** Mar-2018

### Platform Notes (Continued)

```plaintext
Thread(s) per core:  2  
Core(s) per socket:  16  
Socket(s):          1  
NUMA node(s):       2  
Vendor ID:          GenuineIntel  
CPU family:         6  
Model:              85  
Model name:         Intel(R) Xeon(R) Platinum 8153 CPU @ 2.00GHz  
Stepping:           4  
CPU MHz:            1999.997  
BogoMIPS:           3999.99  
Virtualization:     VT-x  
L1d cache:          32K  
L1i cache:          32K  
L2 cache:           1024K  
L3 cache:           22528K  
NUMA node0 CPU(s):  0-3,8-11,16-19,24-27  
NUMA node1 CPU(s):  4-7,12-15,20-23,28-31  
Flags:              fp m f 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 rdtsscp 
                   lm constant_tsc art arch_perfmon pebs bts rep_good nopl xtopology nonstop_tsc 
arperfpref eagerfp vni cplmulqdq dtes64 monitor ds_cpl vmx smx est tm2 ssse3 sdbg 
                   fma cx16 xptr pdcmt pdcm pclmulqdq dtria ssse4_1 ssse4_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 rdtscp kaiser tpr_shadow vnmi 
                   flexpriority ept vpid fsgsbase tsc_adjust bmi1 hle avx2 smep bmi2 erms invpcid rtm 
cqm mxp avx512f avx512dq rdseed adx smap clflushopt clwb avx512cd avx512bw avx512vl 
                   xsaves opt xsavec xgetbv1 cqm_llc cqm_occup_llc pku ospke  
```

From `numactl --hardware` output:

```plaintext
WARNING: a numactl 'node' might or might not correspond to a 
physical chip.  
available: 2 nodes (0-1) 
node 0 cpus: 0 1 2 3 8 9 10 11 16 17 18 19 24 25 26 27  
nodel 0 size: 95256 MB  
nodel 0 free: 94872 MB  
nodel 1 cpus: 4 5 6 7 12 13 14 15 20 21 22 23 28 29 30 31  
nodel 1 size: 96626 MB  
nodel 1 free: 96252 MB  
nodel distances: 
    node 0 1  
    0: 10 11  
    1: 11 10  
```

From `/proc/meminfo`
Supermicro
SuperStorage 5049P-E1CR45H (X11SPL-F, Intel Xeon Platinum 8153)  

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

Platform Notes (Continued)

MemTotal: 196489056 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:
  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-9m9c 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 Jun 25 06:13

SPEC is set to: /home/cpu2017

Filesystem Type Size Used Avail Use% Mounted on
/dev/sda4 xfs 1.8T 44G 1.8T 3% /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. 2.0b 02/26/2018
Memory:
  2x NO DIMM NO DIMM
  6x Samsung M393A4K40CB2-CTD 32 GB 2 rank 2666

(End of data from sysinfo program)
### Compiler Version Notes

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**Supermicro**  
SuperStorage 5049P-E1CR45H (X11SPL-F, Intel Xeon Platinum 8153)

**SPECrate2017_int_base** = 69.7  
**SPECrate2017_int_peak** = 73.9

---

```bash
# Compiler Version Details

---

**CC** 500.perlibench_r(base) 502.gcc_r(base) 505.mcf_r(base) 525.x264_r(base) 557.xz_r(base)

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

---

**CC** 500.perlibench_r(peak) 502.gcc_r(peak) 505.mcf_r(peak) 525.x264_r(peak) 557.xz_r(peak)

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

---

**CXXC** 520.omnetpp_r(base) 523.xalancbmk_r(base) 531.deepsjeng_r(base) 541.leela_r(base)

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

---

**CXXC** 520.omnetpp_r(peak) 523.xalancbmk_r(peak) 531.deepsjeng_r(peak) 541.leela_r(peak)

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

---

**FC** 548.exchange2_r(base)

ifort (IFORT) 18.0.2 20180210
Copyright (C) 1985-2018 Intel Corporation. All rights reserved.

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**FC** 548.exchange2_r(peak)

ifort (IFORT) 18.0.2 20180210
Copyright (C) 1985-2018 Intel Corporation. All rights reserved.
```
## SPEC CPU2017 Integer Rate Result

**Supermicro**
SuperStorage 5049P-E1CR45H (X11SPL-F, Intel Xeon Platinum 8153)

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**SPECrate2017_int_base = 69.7**

**SPECrate2017_int_peak = 73.9**

### 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:**
  - `-Wl,-z,muldefs -xCORE-AVX512 -ipo -O3 -no-prec-div -qopt-mem-layout-trans=3 -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`
**SPEC CPU2017 Integer Rate Result**

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**Peak Compiler Invocation**

C benchmarks (except as noted below):

```plaintext
icc -m64 -std=c11
```

502.gcc_r: `icc -m32 -std=c11 -L/home/prasadj/specdev/IC18u2_Internal/lin_18_0_20180210/compiler/lib/ia32_lin`

C++ benchmarks (except as noted below):

```plaintext
icpc -m64
```

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

Fortran benchmarks:

```plaintext
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`

---

**Peak Optimization Flags**

C benchmarks:

```plaintext
500.perlbench_r: -Wl,-z,muldefs -prof-gen(pass 1) -prof-use(pass 2) -ipo -xCORE-AVX512 -O3 -no-prec-div -qopt-mem-layout-trans=3 -fno-strict-overflow -L/usr/local/je5.0.1-64/lib -ljemalloc
```

```plaintext
502.gcc_r: -Wl,-z,muldefs -prof-gen(pass 1) -prof-use(pass 2) -ipo -xCORE-AVX512 -O3 -no-prec-div -qopt-mem-layout-trans=3 -L/usr/local/je5.0.1-32/lib -ljemalloc
```

```plaintext
505.mcf_r: basepeak = yes
```

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

525.x264_r: -Wl,-z,muldefs -prof-gen(pass 1) -prof-use(pass 2) -ipo  
-xCORE-AVX512 -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: basepeak = yes

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

531.deepsjeng_r: basepeak = yes

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

Fortran benchmarks:

548.exchange2_r: 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:

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 v1.0.2 on 2018-06-25 06:16:14-0400.
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