**Supermicro**

SuperStorage 5029P-E1CTR12L (X11SPH-nCTF, Intel Xeon Platinum 8153)

<table>
<thead>
<tr>
<th>Software Availability</th>
<th>Jun-2018</th>
</tr>
</thead>
<tbody>
<tr>
<td>Test Sponsor</td>
<td>Supermicro</td>
</tr>
<tr>
<td>Tested by</td>
<td>Supermicro</td>
</tr>
</tbody>
</table>

**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 NVMe SSD**

**Other:** None

**Software**

- **OS:** SUSE Linux Enterprise Server 12 SP3 (x86_64)
- **Kernel:** 4.4.114-94.11-default
- **Compiler:** C/C++: Version 18.0.2.199 of Intel C/C++ Compiler for Linux;
  Fortran: Version 18.0.2.199 of Intel Fortran Compiler for Linux
- **Parallel:** No
- **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

---

**SPEC CPU2017 Integer Rate Result**

- **SPECrate2017_int_base = 69.7**
- **SPECrate2017_int_peak = 74.0**

---

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Copies</th>
<th>SPECrate2017_int_base</th>
<th>SPECrate2017_int_peak</th>
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<tbody>
<tr>
<td>500.perlbench_r</td>
<td>32</td>
<td>54.8</td>
<td>74.0</td>
</tr>
<tr>
<td>502.gcc_r</td>
<td>32</td>
<td>62.8</td>
<td>84.8</td>
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<tr>
<td>505.mcf_r</td>
<td>32</td>
<td>47.5</td>
<td>94.0</td>
</tr>
<tr>
<td>520.omnetpp_r</td>
<td>32</td>
<td>67.6</td>
<td>84.0</td>
</tr>
<tr>
<td>523.xalancbmk_r</td>
<td>32</td>
<td>60.3</td>
<td>137</td>
</tr>
<tr>
<td>525.x264_r</td>
<td>32</td>
<td>56.6</td>
<td>138</td>
</tr>
<tr>
<td>531.deepsjeng_r</td>
<td>32</td>
<td>48.1</td>
<td>129</td>
</tr>
<tr>
<td>541.leela_r</td>
<td>32</td>
<td>48.1</td>
<td>137</td>
</tr>
<tr>
<td>548.exchange2_r</td>
<td>32</td>
<td>48.1</td>
<td>138</td>
</tr>
<tr>
<td>557.xz_r</td>
<td>32</td>
<td>48.1</td>
<td>137</td>
</tr>
</tbody>
</table>

---

Graph showing SPECrate2017_int_base and SPECrate2017_int_peak for each benchmark.
Supermicro
SuperStorage 5029P-E1CTR12L (X11SPH-nCTF, Intel Xeon Platinum 8153)

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

SPECrate2017_int_base = 69.7
SPECrate2017_int_peak = 74.0

Results Table

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Copies</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Seconds</th>
<th>Ratio</th>
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<tr>
<td>500.perlbench_r</td>
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<tr>
<td>505.mcf_r</td>
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<td>520.omnetpp_r</td>
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<tr>
<td>525.x264_r</td>
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<td>412</td>
<td>136</td>
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<tr>
<td>531.deepsjeng_r</td>
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<td>61.2</td>
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<td>60.3</td>
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<td>60.2</td>
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<tr>
<td>541.leela_r</td>
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<td>936</td>
<td>56.6</td>
<td>936</td>
<td>56.6</td>
<td>939</td>
<td>56.4</td>
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<tr>
<td>548.exchange2_r</td>
<td>32</td>
<td>648</td>
<td>129</td>
<td>650</td>
<td>129</td>
<td>649</td>
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<tr>
<td>557.xz_r</td>
<td>32</td>
<td>661</td>
<td>52.3</td>
<td>720</td>
<td>48.0</td>
<td>719</td>
<td>48.1</td>
</tr>
</tbody>
</table>

SPECrate2017_int_base = 69.7
SPECrate2017_int_peak = 74.0

Results appear in the order in which they were run. Bold underlined text indicates a median measurement.

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:
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 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
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)
Supermicro
SuperStorage 5029P-E1CTR12L (X11SPH-nCTF, Intel Xeon Platinum 8153)

<table>
<thead>
<tr>
<th>SPECrate2017_int_base</th>
<th>69.7</th>
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<tbody>
<tr>
<td>SPECrate2017_int_peak</td>
<td>74.0</td>
</tr>
</tbody>
</table>

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

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 96c45e4568ad54c135fd618bccc091c0f
running on linux-liai Fri Jun 15 18:58:21 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) 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

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

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Thread(s) per core:</td>
<td>2</td>
</tr>
<tr>
<td>Core(s) per socket:</td>
<td>16</td>
</tr>
<tr>
<td>Socket(s):</td>
<td>1</td>
</tr>
<tr>
<td>NUMA node(s):</td>
<td>2</td>
</tr>
<tr>
<td>Vendor ID:</td>
<td>GenuineIntel</td>
</tr>
<tr>
<td>CPU family:</td>
<td>6</td>
</tr>
<tr>
<td>Model:</td>
<td>85</td>
</tr>
<tr>
<td>Model name:</td>
<td>Intel(R) Xeon(R) Platinum 8153 CPU @ 2.00GHz</td>
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<tr>
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<td>CPU MHz:</td>
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<td>Virtualization:</td>
<td>VT-x</td>
</tr>
<tr>
<td>L1d cache:</td>
<td>32K</td>
</tr>
<tr>
<td>L1i cache:</td>
<td>32K</td>
</tr>
<tr>
<td>L2 cache:</td>
<td>1024K</td>
</tr>
<tr>
<td>L3 cache:</td>
<td>22528K</td>
</tr>
<tr>
<td>NUMA node0 CPU(s):</td>
<td>0-3, 8-11, 16-19, 24-27</td>
</tr>
<tr>
<td>NUMA node1 CPU(s):</td>
<td>4-7, 12-15, 20-23, 28-31</td>
</tr>
<tr>
<td>Flags:</td>
<td>fpu vme de pse tsc msr pae mce 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 aperfmperf eagerfpu pni pclmulqdq dtes64 monitor ds_cpl vmx smx est tm2 ssse3 sdbg fma cx16 xtrm pdu pmcd 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 vомн flexpriority etp fp gbase tsc_adjust bmi1 hle avx2 smep bmi2 erms invpcid rtm cqm mpx avx512f avx512dq rdseed adx smap clflushopt clwb avx512cd avx512bw avx512vl xsaveopt xsave xgetbv1 cqml1c cqmx1c_occup_q1c pk ospke</td>
</tr>
</tbody>
</table>

```
From numactl --hardware
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
node 0 size: 95254 MB
node 0 free: 94781 MB
node 1 cpus: 4 5 6 7 12 13 14 15 20 21 22 23 28 29 30 31
node 1 size: 96623 MB
node 1 free: 96242 MB
node distances:
node 0 1
  0: 10 11
  1: 11 10

From /proc/meminfo
```

(Continued on next page)
**SPEC CPU2017 Integer Rate Result**

**Supermicro**
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| SPECrate2017_int_base = 69.7 |
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**CPU2017 License:** 001176

**Test Sponsor:** Supermicro

**Tested by:** Supermicro

**Test Date:** Jun-2018

**Hardware Availability:** Jul-2017

**Software Availability:** Mar-2018

---

**Platform Notes (Continued)**

- **MemTotal:** 196483632 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-liai 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 15 18:56

SPEC is set to: /home/cpu2017
    Filesystem  Type  Size  Used Avail Use% Mounted on
    /dev/nvme0n1p4  xfs  1.8T  37G  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. 2.1 06/11/2018

**Memory:**
- 2x NO DIMM NO DIMM
- 6x Samsung M393A4K40CB2-CTD 32 GB 2 rank 2666

(End of data from sysinfo program)
Supermicro
SuperStorage 5029P-E1CTR12L (X11SPH-nCTF, Intel Xeon Platinum 8153)

SPEC CPU2017 Integer Rate Result

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

Compiler Version Notes

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

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

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

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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.

********************************************************************************
FC 548.exchange2_r(peak)
********************************************************************************

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**SPEC CPU2017 Integer Rate Result**

**Supermicro**
SuperStorage 5029P-E1CTR12L (X11SPH-nCTF, Intel Xeon Platinum 8153)

<table>
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<tr>
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**Test Sponsor:** Supermicro  
**Test Date:** Jun-2018  
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**Hardware Availability:** Jul-2017  
**Software Availability:** Mar-2018

---

**Base Compiler Invocation**

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

C++ benchmarks:
```bash
icpc -m64
```

Fortran benchmarks:
```bash
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:**
```bash
-W1,-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:**
```bash
-W1,-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:**
```bash
-W1,-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

Supermicro
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CPU2017 License: 001176
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Tested by: Supermicro

Test Date: Jun-2018
Hardware Availability: Jul-2017
Software Availability: Mar-2018

Peak Compiler Invocation

C benchmarks (except as noted below):
  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):
  icpc -m64
  523.xalancbmk_r: icpc -m32 -L/home/prasadj/specdev/IC18u2_Internal/lin_18_0_20180210/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.leea_r: -DSPEC_LP64
548.exchange2_r: -DSPEC_LP64
557.xz_r: -DSPEC_LP64

Peak Optimization Flags

C benchmarks:
  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

  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

  505.mcf_r: basepeak = yes

(Continued on next page)
Supermicro
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CPU2017 License: 001176
Test Sponsor: Supermicro
Tested by: Supermicro

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 2018-06-15 06:58:21-0400.
Originally published on 2018-07-10.