Supermicro
SuperServer 6029P-E1CR16T (X11DPH-T, Intel Xeon Silver 4216)

SPECRate®2017_int_base = 174
SPECRate®2017_int_peak = Not Run

CPU2017 License: 001176
Test Sponsor: Supermicro
Test Date: Dec-2019
Tested by: Supermicro
Hardware Availability: Apr-2019
Software Availability: Jun-2019

<table>
<thead>
<tr>
<th>Test Name</th>
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<th>Copies</th>
<th>SPECrate®2017_int_base (174)</th>
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<tr>
<td>500.perlbench_r</td>
<td>64</td>
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<tr>
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<td>548.exchange2_r</td>
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</tr>
<tr>
<td>557.xz_r</td>
<td>64</td>
<td>115</td>
<td></td>
</tr>
</tbody>
</table>

Hardware

CPU Name: Intel Xeon Silver 4216
Max MHz: 3200
Nominal: 2100
Enabled: 32 cores, 2 chips, 2 threads/core
Orderable: 1,2 chips
Cache L1: 32 KB I+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 (12 x 16 GB 2Rx4 PC4-2933Y-R, running at 2400)
Storage: 800 GB SATA 3 SSD
Other: None

Software

OS: SUSE Linux Enterprise Server 15 SP1
4.12.14-195-default
Compiler: C/C++: Version 19.0.4.227 of Intel C/C++ Compiler Build 20190416 for Linux;
Fortran: Version 19.0.4.227 of Intel Fortran Compiler Build 20190416 for Linux;
Parallel: No
Firmware: version 3.2 released Oct-2019
File System: xfs
System State: Run level 3 (Multi-user mode with networking)
Base Pointers: 64-bit
Peak Pointers: Not Applicable
Other: None
Power Management: BIOS set to prefer performance at the cost of additional power usage
SPEC CPU®2017 Integer Rate Result

Supermicro
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Test Sponsor: Supermicro
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SPECraté®2017_int_base = 174
SPECraté®2017_int_peak = Not Run

Results Table

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<th>Seconds</th>
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<td>603</td>
<td>115</td>
</tr>
</tbody>
</table>

SPECraté®2017_int_base = 174
SPECraté®2017_int_peak = Not Run

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"

Environment Variables Notes

Environment variables set by runcpu before the start of the run:
LD_LIBRARY_PATH =
"/home/cpu2017-1.1.0/lib/intel64:/home/cpu2017-1.1.0/lib/ia32:/home/cpu2017-1.1.0/je5.0.1-32"

General Notes

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
runcpu command invoked through numactl i.e.:

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

**Supermicro**  
SuperServer 6029P-E1CR16T  
(X11DPH-T, Intel Xeon Silver 4216)

<table>
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</tr>
</tbody>
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**CPU2017 License:** 001176  
**Test Sponsor:** Supermicro  
**Tested by:** Supermicro

**Test Date:** Dec-2019  
**Hardware Availability:** Apr-2019  
**Software Availability:** Jun-2019

---

### General Notes (Continued)

```bash	numactl --interleave=all runcpu <etc>
```

NA: 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.

Yes: The test sponsor attests, as of date of publication, that CVE-2018-3640 (Spectre variant 3a) is mitigated in the system as tested and documented.

Yes: The test sponsor attests, as of date of publication, that CVE-2018-3639 (Spectre variant 4) is mitigated in the system as tested and documented.

---

### Platform Notes

**BIOS Settings:**  
Monitor/Mwait = Enable  
Intel Virtualization Technology = Disable  
Power Technology = Custom  
Power Performance Tuning = BIOS Controls EPB  
Energy Performance BIAS Setting = Max Performance  
SNC = Enable  
Stale Atos = Disable  
LLC Dead Line Alloc = Disable  
IMC Interleaving = 1-way Interleave  
ADDC Sparing = Disable  
Patrol Scrub = Disable

**Sysinfo program** /home/cpu2017-1.1.0/bin/sysinfo  
**Rev:** r6365 of 2019-08-21 295195f888a3d7edb1e6e46a485a0011  
**running on linux-fsxm Tue Dec 10 03:40:00 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

```bash
model name : Intel(R) Xeon(R) Silver 4216 CPU @ 2.10GHz
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
physical 1: cores 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15
```

(Continued on next page)
Supermicro
SuperServer 6029P-E1CR16T
(X11DPH-T, Intel Xeon Silver 4216)

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

SPECrate®2017_int_base = 174
SPECrate®2017_int_peak = Not Run

Platform Notes (Continued)

From lscpu:
Architecture: x86_64
CPU op-mode(s): 32-bit, 64-bit
Byte Order: Little Endian
Address sizes: 46 bits physical, 48 bits virtual
CPU(s): 64
On-line CPU(s) list: 0-63
Thread(s) per core: 2
Core(s) per socket: 16
Socket(s): 2
NUMA node(s): 4
Vendor ID: GenuineIntel
CPU family: 6
Model: 85
Model name: Intel(R) Xeon(R) Silver 4216 CPU @ 2.10GHz
Stepping: 6
CPU MHz: 2100.000
CPU max MHz: 3200.0000
CPU min MHz: 800.0000
BogoMIPS: 4200.00
Virtualization: VT-x
L1d cache: 32K
L1i cache: 32K
L2 cache: 1024K
L3 cache: 22528K
NUMA node0 CPU(s): 0-3, 8-11, 32-35, 40-43
NUMA node1 CPU(s): 4-7, 12-15, 36-39, 44-47
NUMA node2 CPU(s): 16-19, 24-27, 48-51, 56-59
NUMA node3 CPU(s): 20-23, 28-31, 52-55, 60-63
Flags: 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 rdtscp lm constant_tsc arch_perfmon pebs bts rep_good nopl xtopology nonstop_tsc cpuid aperfmperf pni pclmulqdq dtes64 monitor ds_cpl vmx smx est tm2 ssse3 sdbg fma cx16 xtpr pdcm pcid dca sse4_1 sse4_2 x2apic movbe popcnt tsc_deadline_timer aes xsave f16c rdrand lahf_lm abm 3dnowprefetch cpuid_fault epb cat_l3 cdp_l3 invpcid_single intel_p Tables for the SPEC CPU 2017 integer rate test.
SPEC CPU®2017 Integer Rate Result

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

SPECrater®2017_int_base = 174
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Test Date: Dec-2019
Hardware Availability: Apr-2019
Software Availability: Jun-2019

Platform Notes (Continued)

available: 4 nodes (0-3)
node 0 cpus: 0 1 2 3 8 9 10 11 32 33 34 35 40 41 42 43
node 0 size: 46966 MB
node 0 free: 46683 MB
node 1 cpus: 4 5 6 7 12 13 14 15 36 37 38 39 44 45 46 47
node 1 size: 48380 MB
node 1 free: 48170 MB
node 2 cpus: 16 17 18 19 24 25 26 27 48 49 50 51 56 57 58 59
node 2 size: 48380 MB
node 2 free: 48187 MB
node 3 cpus: 20 21 22 23 28 29 30 31 52 53 54 55 60 61 62 63
node 3 size: 48350 MB
node 3 free: 48118 MB

node distances:
node 0 1 2 3
0: 10 11 21 21
1: 11 10 21 21
2: 21 21 10 11
3: 21 21 11 10

From /proc/meminfo
MemTotal: 196688348 kB
HugePages_Total: 0
Hugepagesize: 2048 kB

From /etc/*release*/etc/*version*

os-release:
NAME="SLES"
VERSION="15-SP1"
VERSION_ID="15.1"
PRETTY_NAME="SUSE Linux Enterprise Server 15 SP1"
ID="sles"
ID_LIKE="suse"
ANCE_COLOR="#0;32"
CPE_NAME="cpe:/o:suse:sles:15:sp1"

uname -a:
Linux linux-fsxm 4.12.14-195-default #1 SMP Tue May 7 10:55:11 UTC 2019 (8fba516)
x86_64 x86_64 x86_64 GNU/Linux

Kernel self-reported vulnerability status:

CVE-2018-3620 (L1 Terminal Fault): Not affected
Microarchitectural Data Sampling: Not affected
CVE-2017-5754 (Meltdown): Not affected
CVE-2018-3639 (Speculative Store Bypass): Mitigation: Speculative Store Bypass disabled via prctl and seccomp

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

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### Platform Notes (Continued)

**CVE-2017-5753 (Spectre variant 1):**  
Mitigation: __user pointer sanitization

**CVE-2017-5715 (Spectre variant 2):**  
Mitigation: Enhanced IBRS, IBPB: conditional, RSB filling

---

run-level 3 Dec 10 03:38

SPEC is set to: /home/cpu2017-1.1.0

<table>
<thead>
<tr>
<th>Filesystem</th>
<th>Type</th>
<th>Size</th>
<th>Used</th>
<th>Avail</th>
<th>Use%</th>
<th>Mounted on</th>
</tr>
</thead>
<tbody>
<tr>
<td>/dev/sda3</td>
<td>xfs</td>
<td>711G</td>
<td>99G</td>
<td>613G</td>
<td>14%</td>
<td>/home</td>
</tr>
</tbody>
</table>

From /sys/devices/virtual/dmi/id

- **BIOS:** American Megatrends Inc. 3.2 10/22/2019
- **Vendor:** Supermicro
- **Product:** Super Server
- **Serial:** 0123456789

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.

**Memory:**

- 4x NO DIMM NO DIMM
- 12x SK Hynix HMA82GR7JJR8N-WM 16 GB 2 rank 2933

(End of data from sysinfo program)

### Compiler Version Notes

---

**C**

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

---

**Intel(R) C Intel(R) 64 Compiler for applications running on Intel(R) 64, Version 19.0.4.227 Build 20190416**

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---

**C++**

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

---

**Intel(R) C++ Intel(R) 64 Compiler for applications running on Intel(R) 64, Version 19.0.4.227 Build 20190416**

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### SPEC CPU®2017 Integer Rate Result

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

---

#### Compiler Version Notes (Continued)

**Fortran | 548.exchange2_r(base)**

Intel(R) Fortran Intel(R) 64 Compiler for applications running on Intel(R)  
64, Version 19.0.4.227 Build 20190416  
Copyright (C) 1985-2019 Intel Corporation. All rights reserved.

---

#### 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=4  
-L/usr/local/IntelCompiler19/compilers_and_libraries_2019.4.227/linux/compiler/lib/intel64  
-lqkmalloc
```

(Continued on next page)
Supermicro
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C++ benchmarks:
-Wl,-z,muldefs -xCORE-AVX512 -ipo -O3 -no-prec-div
-qopt-mem-layout-trans=4
-L/usr/local/IntelCompiler19/compilers_and_libraries_2019.4.227/linux/compiler/lib/intel64
-lqkmalloc

Fortran benchmarks:
-Wl,-z,muldefs -xCORE-AVX512 -ipo -O3 -no-prec-div
-qopt-mem-layout-trans=4 -nostandard-realloc-lhs -align array32byte
-L/usr/local/IntelCompiler19/compilers_and_libraries_2019.4.227/linux/compiler/lib/intel64
-lqkmalloc

The flags files that were used to format this result can be browsed at
http://www.spec.org/cpu2017/flags/Supermicro-Platform-Settings-V1.2-CLX-revF.html

You can also download the XML flags sources by saving the following links:
http://www.spec.org/cpu2017/flags/Supermicro-Platform-Settings-V1.2-CLX-revF.xml