### SPEC CPU®2017 Integer Rate Result

**Supermicro**

SuperServer 1029P-WTRT
(X11DDW-NT, Intel Xeon Silver 4210R)

---

**SPECrate®2017_int_base** = 127

---

**SPECrate®2017_int_peak** = Not Run

---

**CPU2017 License:** 001176

**Test Date:** Aug-2020

**Test Sponsor:** Supermicro

**Hardware Availability:** Feb-2020

**Tested by:** Supermicro

**Software Availability:** Apr-2020

---

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<td>505.mcf_r</td>
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<tr>
<td>531.deepsjeng_r</td>
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<td>541.leela_r</td>
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<td>548.exchange2_r</td>
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</tr>
<tr>
<td>557.xz_r</td>
<td>40</td>
</tr>
</tbody>
</table>

---

### Hardware

**CPU Name:** Intel Xeon Silver 4210R

**Max MHz:** 3200

**Nominal:** 2400

**Enabled:** 20 cores, 2 chips, 2 threads/core

**Orderable:** 1.2 chips

**Cache L1:** 32 KB I + 32 KB D on chip per core

**L2:** 1 MB I+D on chip per core

**L3:** 13.75 MB I+D on chip per chip

**Other:** None

**Memory:** 384 GB (12 x 32 GB 2Rx4 PC4-2933Y-R, running at 2400)

**Storage:** 1 x 240 GB SATA SSD

**Other:** None

**Power Management:** BIOS set to prefer performance at the cost of additional power usage.

---

### Software

**OS:** Red Hat Enterprise Linux release 8.2 (Ootpa)

4.18.0-193.el8.x86_64

**Compiler:** C/C++: Version 19.1.1.217 of Intel C/C++ Compiler for Linux;
Fortran: Version 19.1.1.217 of Intel Fortran Compiler for Linux

**Parallel:** No

**Firmware:** Version 3.3 released Feb-2020

**File System:** xfs

**System State:** Run level 3 (multi-user)

**Base Pointers:** 64-bit

**Peak Pointers:** Not Applicable

**Other:** None
### Supermicro

**SuperServer 1029P-WTRT**

(X11DDW-NT, Intel Xeon Silver 4210R)

---

### SPEC CPU®2017 Integer Rate Result

#### SPECrate®2017_int_base = **127**

#### SPECrate®2017_int_peak = **Not Run**

**CPU2017 License:** 001176

**Test Sponsor:** Supermicro

**Tested by:** Supermicro

**Test Date:** Aug-2020

**Hardware Availability:** Feb-2020

**Software Availability:** Apr-2020

---

### Results Table

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</tbody>
</table>

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

---

### Compiler Notes

The inconsistent Compiler version information under Compiler Version section is due to a discrepancy in Intel Compiler.

The correct version of C/C++ compiler is: Version 19.1.1.217 Build 20200306 Compiler for Linux

The correct version of Fortran compiler is: Version 19.1.1.217 Build 20200306 Compiler for Linux

---

### 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/lib/intel64:/home/cpu2017/lib/ia32:/home/cpu2017/je5.0.1-32"
```

```
MALLOC_CONF = "retain:true"
```
**SPEC CPU®2017 Integer Rate Result**

**Supermicro**

SuperServer 1029P-WTRT  
(X11DDW-NT, Intel Xeon Silver 4210R)

<table>
<thead>
<tr>
<th>SPECrate®2017_int_base</th>
<th>127</th>
</tr>
</thead>
<tbody>
<tr>
<td>SPECrate®2017_int_peak</td>
<td>Not Run</td>
</tr>
</tbody>
</table>

**General Notes**

Binaries compiled on a system with 1x Intel Core i9-7980XE CPU + 64GB RAM  
memory using Redhat Enterprise Linux 8.0  
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>

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.

**Platform Notes**

Sysinfo program /home/cpu2017/bin/sysinfo  
Rev: r6365 of 2019-08-21 295195f888a3d7edbb1e6e46a485a0011  
running on localhost.localdomain Mon Aug 17 14:47:45 2020

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 4210R CPU @ 2.40GHz  
2 "physical id"s (chips)  
40 "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 : 10  
siblings : 20  
physical 0: cores 01 2 3 4 8 9 10 11 12  
physical 1: cores 01 2 3 4 8 9 10 11 12

From lscpu:  
Architecture: x86_64  
CPU op-mode(s): 32-bit, 64-bit  
Byte Order: Little Endian  
CPU(s): 40  
On-line CPU(s) list: 0-39  
Thread(s) per core: 2  
Core(s) per socket: 10

(Continued on next page)
Supermicro
SuperServer 1029P-WTRT
(X11DDW-NT, Intel Xeon Silver 4210R)

SPECrate®2017_int_base = 127
SPECrate®2017_int_peak = Not Run

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

Platform Notes (Continued)

Socket(s): 2
NUMA node(s): 2
Vendor ID: GenuineIntel
CPU family: 6
Model: 85
Model name: Intel(R) Xeon(R) Silver 4210R CPU @ 2.40GHz
Stepping: 7
CPU MHz: 1000.076
BogoMIPS: 4800.00
Virtualization: VT-x
L1d cache: 32K
L1i cache: 32K
L2 cache: 1024K
L3 cache: 14080K
NUMA node0 CPU(s): 0-9,20-29
NUMA node1 CPU(s): 10-19,30-39
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 rdtsscp
lm constant_tsc arch_perfmon pebs bts rep_good nopl xtopology nonstop_tsc cpuid
aperfmpref pni pclmulqdq dtes64 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 avx fl64
rdrand lahf_lm abm 3dnowprefetch cpuid_fault epb cat_l3 cdp_l3 invpcid_single
intel_ppln ssbd mba ibrs ibpb ibrsenhanced trp_shadow vmxflexpriority ept
vpid fsgsbase tsc_adjust bmi1 hle avx2 smep bmi2 erms invpcid rdt_a
avx512f avx512dq rdseed adx smap clflushopt clwb intel_pt avx512cd avx512bw avx512vl
xsaveopt xsaves xsavec xgetbv1 xsaves cqm_llc cqm_occup_llc cqm_mbm_total cqm_mbm_local
dtherm ida arat pln pts hw_epp pku ospke avx512_vnni md_clear flush_l1d
arch_capabilities

/proc/cpuinfo cache data
 cache size : 14080 KB

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 4 5 6 7 8 9 20 21 22 23 24 25 26 27 28 29
 node 0 size: 191857 MB
 node 0 free: 191106 MB
 node 1 cpus: 10 11 12 13 14 15 16 17 18 19 30 31 32 33 34 35 36 37 38 39
 node 1 size: 193503 MB
 node 1 free: 193092 MB
 node distances:
 node 0: 1
  0: 10 21
  1: 21 10

From /proc/meminfo

(Continued on next page)
SPECCPU®2017 Integer Rate Result

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Supermicro
SuperServer 1029P-WTRT
(X11DDW-NT, Intel Xeon Silver 4210R)

SPECrate®2017_int_base = 127
SPECrate®2017_int_peak = Not Run

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

Test Date: Aug-2020
Hardware Availability: Feb-2020
Software Availability: Apr-2020

Platform Notes (Continued)

MemTotal: 394609496 kB
HugePages_Total: 0
Hugepagesize: 2048 kB

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

os-release:
NAME="Red Hat Enterprise Linux"
VERSION=\"8.2 (Ootpa)\"
ID=\"rhel\"
ID_LIKE=\"fedora\"
VERSION_ID=\"8.2\"
PLATFORM_ID=\"platform:el8\"
PRETTY_NAME=\"Red Hat Enterprise Linux 8.2 (Ootpa)\"
ANSI_COLOR=\"0;31\"
redhat-release: Red Hat Enterprise Linux release 8.2 (Ootpa)
system-release: Red Hat Enterprise Linux release 8.2 (Ootpa)
system-release-cpe: cpe:/o:redhat:enterprise_linux:8.2:ga
uname -a:
Linux localhost.localdomain 4.18.0-193.el8.x86_64 #1 SMP Fri Mar 27 14:35:58 UTC 2020
x86_64 x86_64 x86_64 GNU/Linux

Kernel self-reported vulnerability status:

itlb_multihit: KVM: Mitigation: Split huge pages
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
CVE-2017-5753 (Spectre variant 1): Mitigation: usercopy/swapgs barriers and __user pointer sanitization
CVE-2017-5715 (Spectre variant 2): Mitigation: Enhanced IBRS, IBPB: conditional, RSB filling
tsx_async_abort: Mitigation: Clear CPU buffers; SMT vulnerable
run-level 3 Aug 17 14:39

SPEC is set to: /home/cpu2017
Filesystem Type Size Used Avail Use% Mounted on
/dev/mapper/rhel-home xfs 168G 16G 153G 10% /home

From /sys/devices/virtual/dmi/id
BIOS: American Megatrends Inc. 3.3 02/21/2020
Vendor: Supermicro
Product: Super Server
Serial: 0123456789

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

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:

```
12x SK Hynix HMA84GR7JJR4N-WM 32 GB 2 rank 2933
```

(End of data from sysinfo program)

### Compiler Version Notes

<table>
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<tr>
<th>C</th>
<th>500.perlbench_r(base) 502.gcc_r(base) 505.mcf_r(base) 525.x264_r(base) 557.xz_r(base)</th>
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Intel(R) C Compiler for applications running on Intel(R) 64, Version 2021.1
NextGen Build 20200304
Copyright (C) 1985-2020 Intel Corporation. All rights reserved.

<table>
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<tr>
<th>C++</th>
<th>520.omnetpp_r(base) 523.xalancbmk_r(base) 531.deepsjeng_r(base) 541.leela_r(base)</th>
</tr>
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</table>

Intel(R) C++ Compiler for applications running on Intel(R) 64, Version 2021.1
NextGen Build 20200304
Copyright (C) 1985-2020 Intel Corporation. All rights reserved.

<table>
<thead>
<tr>
<th>Fortran</th>
<th>548.exchange2_r(base)</th>
</tr>
</thead>
</table>

Intel(R) Fortran Intel(R) 64 Compiler for applications running on Intel(R) 64, Version 19.1.1.217 Build 20200306
Copyright (C) 1985-2020 Intel Corporation. All rights reserved.

### Base Compiler Invocation

C benchmarks:
- icc

C++ benchmarks:
- icpc

(Continued on next page)
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- **Test Sponsor:** Supermicro  
- **Tested by:** Supermicro  
- **Test Date:** Aug-2020  
- **Hardware Availability:** Feb-2020  
- **Software Availability:** Apr-2020

## Base Compiler Invocation (Continued)

- Fortran benchmarks:  
  - `ifort`

## 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:
- `-m64 -qnextgen -std=c11`
- `-Wl,-plugin-opt=-x86-branches-within-32B-boundaries -Wl,-z,muldefs`
- `-xCORE-AVX512 -O3 -ffast-math -flio -mfpmath=sse -funroll-loops`
- `-fuse-ld=gold -qopt-mem-layout-trans=4`
- `-L/usr/local/IntelCompiler19/compilers_and_libraries_2020.1.217/linux/compiler/lib/intel64_lin`
- `-lqkmalloc`

### C++ benchmarks:
- `-m64 -qnextgen -Wl,-plugin-opt=-x86-branches-within-32B-boundaries`
- `-Wl,-z,muldefs -xCORE-AVX512 -O3 -ffast-math -flio -mfpmath=sse`
- `-funroll-loops -fuse-ld=gold -qopt-mem-layout-trans=4`
- `-L/usr/local/IntelCompiler19/compilers_and_libraries_2020.1.217/linux/compiler/lib/intel64_lin`
- `-lqkmalloc`

### Fortran benchmarks:
- `-m64 -Wl,-plugin-opt=-x86-branches-within-32B-boundaries -Wl,-z,muldefs`
- `-xCORE-AVX512 -O3 -ipo -no-prec-div -qopt-mem-layout-trans=4`
- `-nostandard-realloc-lhs -align array32byte -auto`
- `-mbranches-within-32B-boundaries`
- `-L/usr/local/IntelCompiler19/compilers_and_libraries_2020.1.217/linux/compiler/lib/intel64_lin`
- `-lqkmalloc`
### SPEC CPU®2017 Integer Rate Result

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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/Supermicro-Platform-Settings-V1.2-CLX-revH.xml](http://www.spec.org/cpu2017/flags/Supermicro-Platform-Settings-V1.2-CLX-revH.xml)

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

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