Supermicro
SuperServer 2029P-C1R (X11DPI-N, Intel Xeon Silver 4214R)

SPECrate®2017_int_base = 143
SPECrate®2017_int_peak = Not Run

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

Test Date: Dec-2019
Hardware Availability: Feb-2020
Software Availability: Jun-2019

<table>
<thead>
<tr>
<th>SPECrate®2017_int_base</th>
<th>SPECrate®2017_int_peak</th>
</tr>
</thead>
<tbody>
<tr>
<td>143</td>
<td>Not Run</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>SPECrate®2017_int_base</th>
</tr>
</thead>
<tbody>
<tr>
<td>(143)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Hardware</th>
<th>Software</th>
</tr>
</thead>
<tbody>
<tr>
<td>CPU Name: Intel Xeon Silver 4214R</td>
<td>OS: SUSE Linux Enterprise Server 15 SP1 4.12.14-195-default</td>
</tr>
<tr>
<td>Max MHz: 3500</td>
<td>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</td>
</tr>
<tr>
<td>Nominal: 2400</td>
<td>Parallel: No</td>
</tr>
<tr>
<td>Enabled: 24 cores, 2 chips, 2 threads/core</td>
<td>Firmware: version 3.1a released Oct-2019</td>
</tr>
<tr>
<td>Orderable: 1.2 chips</td>
<td>File System: xfs</td>
</tr>
<tr>
<td>Cache L1: 32 KB I + 32 KB D on chip per core</td>
<td>System State: Run level 3 (Multi-user mode with networking)</td>
</tr>
<tr>
<td>L2: 1 MB I+D on chip per core</td>
<td>Base Pointers: 64-bit</td>
</tr>
<tr>
<td>L3: 16.5 MB I+D on chip per chip</td>
<td>Peak Pointers: Not Applicable</td>
</tr>
<tr>
<td>Other: None</td>
<td>Other: None</td>
</tr>
<tr>
<td>Memory: 192 GB (12 x 16 GB 2Rx4 PC4-2933V-R, running at 2400)</td>
<td>Power Management: BIOS set to max performance at the cost of additional power usage</td>
</tr>
<tr>
<td>Storage: 800 GB SATA 3 SSD</td>
<td></td>
</tr>
<tr>
<td>Other: None</td>
<td></td>
</tr>
</tbody>
</table>
## Results Table

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Copies</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Seconds</th>
<th>Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>500.perlbench_r</td>
<td>48</td>
<td>724</td>
<td>106</td>
<td>729</td>
<td>105</td>
<td>723</td>
<td>106</td>
</tr>
<tr>
<td>502.gcc_r</td>
<td>48</td>
<td>565</td>
<td>120</td>
<td>578</td>
<td>118</td>
<td>571</td>
<td>119</td>
</tr>
<tr>
<td>505.mcf_r</td>
<td>48</td>
<td>398</td>
<td>195</td>
<td>399</td>
<td>194</td>
<td>399</td>
<td>194</td>
</tr>
<tr>
<td>520.omnetpp_r</td>
<td>48</td>
<td>663</td>
<td>94.9</td>
<td>664</td>
<td>94.9</td>
<td>662</td>
<td>95.1</td>
</tr>
<tr>
<td>523.xalancbmk_r</td>
<td>48</td>
<td>308</td>
<td>165</td>
<td>306</td>
<td>165</td>
<td>308</td>
<td>165</td>
</tr>
<tr>
<td>525.x264_r</td>
<td>48</td>
<td>296</td>
<td>284</td>
<td>296</td>
<td>284</td>
<td>295</td>
<td>285</td>
</tr>
<tr>
<td>531.deepsjeng_r</td>
<td>48</td>
<td>469</td>
<td>117</td>
<td>469</td>
<td>117</td>
<td>468</td>
<td>117</td>
</tr>
<tr>
<td>541.leela_r</td>
<td>48</td>
<td>734</td>
<td>108</td>
<td>729</td>
<td>109</td>
<td>736</td>
<td>108</td>
</tr>
<tr>
<td>548.exchange2_r</td>
<td>48</td>
<td>447</td>
<td>281</td>
<td>447</td>
<td>281</td>
<td>448</td>
<td>281</td>
</tr>
<tr>
<td>557.xz_r</td>
<td>48</td>
<td>569</td>
<td>91.2</td>
<td>569</td>
<td>91.2</td>
<td>568</td>
<td>91.2</td>
</tr>
</tbody>
</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"

### Environment Variables Notes

Environment variables set by runcpu before the start of the run:

```bash
LD_LIBRARY_PATH = 
"/home/cpu2017-1.1.0/lib/intel64:/home/cpu2017-1.1.0/lib/ia32:/home/cpu2017-1.1.0/jed5.0.1-32"
```

### 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:

```bash
sync; echo 3 > /proc/sys/vm/drop_caches
```

runcpu command invoked through numactl i.e.:

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

(Continued on next page)
Supermicro
SuperServer 2029P-C1R (X11DPi-N, Intel Xeon Silver 4214R)

SPECrate®2017_int_base = 143
SPECrate®2017_int_peak = Not Run

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

Test Date: Dec-2019
Hardware Availability: Feb-2020
Software Availability: Jun-2019

General Notes (Continued)

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 = Disable
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
ADDDC Sparing = Disable
Patrol Scrub = Disable

Sysinfo program /home/cpu2017-1.1.0/bin/sysinfo
Rev: r6365 of 2019-08-21 295195f888a3d7edbl6e6e46a485a0011
running on 144-42 Fri Dec 13 18:29:45 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
model name : Intel(R) Xeon(R) Silver 4214R CPU @ 2.40GHz
  2 "physical id"s (chips)
  48 "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 : 12
siblings : 24
  physical 0: cores 0 1 2 3 4 5 8 9 10 11 12 13
  physical 1: cores 0 1 2 3 4 5 8 9 10 11 12 13

From lscpu:
SPEC CPU®2017 Integer Rate Result

Supermicro
SuperServer 2029P-C1R (X11DPi-N, Intel Xeon Silver 4214R)

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

SPECrate®2017_int_base = 143
SPECrate®2017_int_peak = Not Run

Test Date: Dec-2019
Hardware Availability: Feb-2020
Software Availability: Jun-2019

Platform Notes (Continued)

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): 48
On-line CPU(s) list: 0-47
Thread(s) per core: 2
Core(s) per socket: 12
Socket(s): 4
NUMA node(s): 4
Vendor ID: GenuineIntel
CPU family: 6
Model: 85
Model name: Intel(R) Xeon(R) Silver 4214R CPU @ 2.40GHz
Stepping: 7
CPU MHz: 2400.000
CPU max MHz: 3500.0000
CPU min MHz: 1000.0000
BogoMIPS: 4800.00
Virtualization: VT-x
L1d cache: 32K
L1i cache: 32K
L2 cache: 1024K
L3 cache: 16896K
NUMA node0 CPU(s): 0-2, 6-8, 24-26, 30-32
NUMA node1 CPU(s): 3-5, 9-11, 27-29, 33-35
NUMA node2 CPU(s): 12-14, 18-20, 36-38, 42-44
NUMA node3 CPU(s): 15-17, 21-23, 39-41, 45-47
Flags:

From numactl --hardware WARNING: a numactl 'node' might or might not correspond to a physical chip.
available: 4 nodes (0-3)

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

**Supermicro**
SuperServer 2029P-C1R (X11DPI-N, Intel Xeon Silver 4214R)

<table>
<thead>
<tr>
<th>CPU2017 License:</th>
<th>001176</th>
<th>Test Date:</th>
<th>Dec-2019</th>
</tr>
</thead>
<tbody>
<tr>
<td>Test Sponsor:</td>
<td>Supermicro</td>
<td>Hardware Availability:</td>
<td>Feb-2020</td>
</tr>
<tr>
<td>Tested by:</td>
<td>Supermicro</td>
<td>Software Availability:</td>
<td>Jun-2019</td>
</tr>
</tbody>
</table>

**SPECrate®2017_int_base** = 143

**SPECrate®2017_int_peak** = Not Run

---

### Platform Notes (Continued)

```
node 0 cpus: 0 1 2 6 7 8 24 25 26 30 31 32
node 0 size: 46974 MB
node 0 free: 46609 MB
node 1 cpus: 3 4 5 9 10 11 27 28 29 33 34 35
node 1 size: 48381 MB
node 1 free: 48160 MB
node 2 cpus: 12 13 14 18 19 20 36 37 38 42 43 44
node 2 size: 48381 MB
node 2 free: 48188 MB
node 3 cpus: 15 16 17 21 22 23 39 40 41 45 46 47
node 3 size: 48351 MB
node 3 free: 48193 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: 196699172 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"
    ANSI_COLOR="0;32"
    CPE_NAME="cpe:/o:suse:sles:15:sp1"

uname --a:
  Linux 144-42 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
- **CVE-2017-5753** (Spectre variant 1): Mitigation: __user pointer sanitization
```

(Continued on next page)
Platform Notes (Continued)

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

run-level 3 Dec 13 18:20

SPEC is set to: /home/cpu2017-1.1.0

Filesystem Type Size Used Avail Use% Mounted on
/dev/sda3 xfs 711G 122G 589G 18% /home

From /sys/devices/virtual/dmi/id
BIOS: American Megatrends Inc. 3.1a 10/16/2019
Vendor: Supermicro
Product: X11DPi-N(T)
Product Family: SMC X11
Serial: 123456789

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 Micron 18ASF2G72PDZ-2G9E1 16 GB 2 rank 2933
4x NO DIMM NO DIMM

(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
Copyright (C) 1985-2019 Intel Corporation. All rights reserved.

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
Copyright (C) 1985-2019 Intel Corporation. All rights reserved.

(Continued on next page)
Supermicro
SuperServer 2029P-C1R (X11DPI-N, Intel Xeon Silver 4214R)

SPEC®2017_int_base = 143
SPEC®2017_int_peak = Not Run

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

Test Date: Dec-2019
Hardware Availability: Feb-2020
Software Availability: Jun-2019

Compiler Version Notes (Continued)

Fortran | 548.exchange2_r(base)

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-AVX2 -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
SuperServer 2029P-C1R (X11DPI-N, Intel Xeon Silver 4214R)

Copyright 2017-2020 Standard Performance Evaluation Corporation

SPECrate®2017_int_base = 143
SPECrate®2017_int_peak = Not Run

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

Test Date: Dec-2019
Hardware Availability: Feb-2020
Software Availability: Jun-2019

C++ benchmarks:
-Wl,-z,muldefs -xCORE-AVX2 -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-AVX2 -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.2020-01-09.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.2020-01-09.xml

SPEC CPU and SPECrate are registered trademarks of the Standard Performance Evaluation Corporation. All other brand and product names appearing in this result are trademarks or registered trademarks of their respective holders.

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

Tested with SPEC CPU®2017 v1.1.0 on 2019-12-13 21:29:45-0500.
Report generated on 2020-04-14 14:10:07 by CPU2017 PDF formatter v6255.
Originally published on 2020-04-14.