# SPEC® CPU2017 Integer Rate Result

## Supermicro

SuperServer 5019C-L (X11SCL-IF , Intel Xeon E-2124G)

<table>
<thead>
<tr>
<th>CPU2017 License:</th>
<th>001176</th>
</tr>
</thead>
<tbody>
<tr>
<td>Test Sponsor:</td>
<td>Supermicro</td>
</tr>
<tr>
<td>Tested by:</td>
<td>Supermicro</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Copies</th>
<th>SPECrate2017_int_base</th>
<th>SPECrate2017_int_peak</th>
</tr>
</thead>
<tbody>
<tr>
<td>4</td>
<td>24.0</td>
<td>25.6</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Software Availability:</th>
<th>Nov-2018</th>
</tr>
</thead>
<tbody>
<tr>
<td>Test Date:</td>
<td>Oct-2018</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Hardware</th>
<th>Software</th>
</tr>
</thead>
<tbody>
<tr>
<td>CPU Name: Intel Xeon E-2124G</td>
<td>OS: SUSE Linux Enterprise Server 12 SP3 (x86_64)</td>
</tr>
<tr>
<td>Max MHz.: 4500</td>
<td>Kernel 4.4.114-94.11-default</td>
</tr>
<tr>
<td>Nominal: 3400</td>
<td>Compiler: C/C++: Version 18.0.2.199 of Intel C/C++</td>
</tr>
<tr>
<td>Enabled: 4 cores, 1 chip</td>
<td>Compiler for Linux: Fortran: Version 18.0.2.199 of Intel Fortran</td>
</tr>
<tr>
<td>Orderable: 1 chip</td>
<td>Compiler for Linux:</td>
</tr>
<tr>
<td>Cache L1: 32 KB I + 32 KB D on chip per core</td>
<td>Parallel: No</td>
</tr>
<tr>
<td>L2: 256 KB I+D on chip per core</td>
<td>Firmware: Supermicro BIOS version 1.0 released Sep-2018</td>
</tr>
<tr>
<td>L3: 8 MB I+D on chip per chip</td>
<td>File System: xfs</td>
</tr>
<tr>
<td>Other: None</td>
<td>System State: Run level 3 (multi-user)</td>
</tr>
<tr>
<td>Memory: 32 GB (2 x 16 GB 2Rx8 PC4-2666V-E)</td>
<td>Base Pointers: 64-bit</td>
</tr>
<tr>
<td>Storage: 1 x 512 GB NVMe SSD</td>
<td>Peak Pointers: 32/64-bit</td>
</tr>
<tr>
<td>Other: None</td>
<td>Other: jemalloc memory allocator library V5.0.1</td>
</tr>
</tbody>
</table>
Supermicro
SuperServer 5019C-L (X11SCL-IF, Intel Xeon E-2124G)

**SPEC CPU2017 Integer Rate Result**

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Copies</th>
<th>Base Seconds</th>
<th>Base Ratio</th>
<th>Peak Seconds</th>
<th>Peak Ratio</th>
<th>Base Seconds</th>
<th>Base Ratio</th>
<th>Peak Seconds</th>
<th>Peak Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>500.perlbench_r</td>
<td>4</td>
<td>294</td>
<td>21.7</td>
<td>296</td>
<td>21.5</td>
<td>296</td>
<td>21.5</td>
<td>251</td>
<td>25.3</td>
</tr>
<tr>
<td>502.gcc_r</td>
<td>4</td>
<td>243</td>
<td>23.3</td>
<td>243</td>
<td>23.3</td>
<td>200</td>
<td>28.3</td>
<td>200</td>
<td>28.3</td>
</tr>
<tr>
<td>505.mcf_r</td>
<td>4</td>
<td>234</td>
<td>27.6</td>
<td>235</td>
<td>27.5</td>
<td>235</td>
<td>27.5</td>
<td>235</td>
<td>27.5</td>
</tr>
<tr>
<td>520.omnetpp_r</td>
<td>4</td>
<td>383</td>
<td>13.7</td>
<td>386</td>
<td>13.6</td>
<td>386</td>
<td>13.6</td>
<td>386</td>
<td>13.6</td>
</tr>
<tr>
<td>523.xalancbmk_r</td>
<td>4</td>
<td>172</td>
<td>24.6</td>
<td>172</td>
<td>24.5</td>
<td>173</td>
<td>24.4</td>
<td>140</td>
<td>30.3</td>
</tr>
<tr>
<td>525.x264_r</td>
<td>4</td>
<td>132</td>
<td>53.3</td>
<td>131</td>
<td>53.4</td>
<td>131</td>
<td>53.4</td>
<td>123</td>
<td>56.9</td>
</tr>
<tr>
<td>531.deepsjeng_r</td>
<td>4</td>
<td>218</td>
<td>21.0</td>
<td>218</td>
<td>21.0</td>
<td>218</td>
<td>21.0</td>
<td>218</td>
<td>21.0</td>
</tr>
<tr>
<td>541.leela_r</td>
<td>4</td>
<td>361</td>
<td>18.3</td>
<td>361</td>
<td>18.3</td>
<td>361</td>
<td>18.3</td>
<td>361</td>
<td>18.3</td>
</tr>
<tr>
<td>548.exchange2_r</td>
<td>4</td>
<td>206</td>
<td>50.9</td>
<td>210</td>
<td>49.8</td>
<td>206</td>
<td>50.8</td>
<td>206</td>
<td>50.8</td>
</tr>
<tr>
<td>557.xz_r</td>
<td>4</td>
<td>326</td>
<td>13.3</td>
<td>327</td>
<td>13.2</td>
<td>327</td>
<td>13.2</td>
<td>326</td>
<td>13.3</td>
</tr>
</tbody>
</table>

**Results Table**

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

**Submit Notes**

The taskset mechanism was used to bind copies to processors. The config file option 'submit' was used to generate taskset 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
```

Yes: 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.

(Continued on next page)
General Notes (Continued)

jemalloc, a general purpose malloc implementation
built with the RedHat Enterprise 7.5, and the system compiler gcc 4.8.5

Platform Notes

Sysinfo program /home/cpu2017/bin/sysinfo
Rev: r5974 of 2018-05-19 9bcde8f2999c33d61f64985e45859ea9
running on linux-0lg1 Fri Oct 26 09:20:29 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) E-2124G CPU @ 3.40GHz
  1 "physical id"s (chips)
  4 "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 : 4
  siblings : 4
  physical 0: cores 0 1 2 3

From lscpu:

  Architecture: x86_64
  CPU op-mode(s): 32-bit, 64-bit
  Byte Order: Little Endian
  CPU(s): 4
  On-line CPU(s) list: 0-3
  Thread(s) per core: 1
  Core(s) per socket: 4
  Socket(s): 1
  NUMA node(s): 1
  Vendor ID: GenuineIntel
  CPU family: 6
  Model: 158
  Model name: Intel(R) Xeon(R) E-2124G CPU @ 3.40GHz
  Stepping: 10
  CPU MHz: 4496.578
  CPU max MHz: 4500.0000
  CPU min MHz: 800.0000
  BogoMIPS: 6815.99
  Virtualization: VT-x
  L1d cache: 32K
  L1i cache: 32K

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

### Supermicro

**SuperServer 5019C-L (X11SCL-IF, Intel Xeon E-2124G)**

<table>
<thead>
<tr>
<th>CPU2017 License:</th>
<th>001176</th>
</tr>
</thead>
<tbody>
<tr>
<td>Test Sponsor:</td>
<td>Supermicro</td>
</tr>
<tr>
<td>Tested by:</td>
<td>Supermicro</td>
</tr>
</tbody>
</table>

**SPECrate2017_int_base = 24.0**

**SPECrate2017_int_peak = 25.6**

<table>
<thead>
<tr>
<th>Test Date:</th>
<th>Oct-2018</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hardware Availability:</td>
<td>Nov-2018</td>
</tr>
<tr>
<td>Software Availability:</td>
<td>Mar-2018</td>
</tr>
</tbody>
</table>

### Platform Notes (Continued)

L2 cache: 256K  
L3 cache: 8192K  
NUMA node0 CPU(s): 0-3

Flags:  
- fpu  
- vme  
- de  
- pae  
- mce  
- cmov  
- stc  
- mtrr  
- pge  
- mca  
- cmov  
- x2apic  
- movbe  
- popcnt  
- tsc  
- deadlinetimer  
- aes  
- xsave  
- avx  
- f16c  
- rdrand  
- lahf_lm  
- abm  
- 3dnowprefetch  
- ibad  
- epb  
- invpcid_single  
- pln  
- pts  
- dtherm  
- hwp  
- notify  
- hwp_act_window  
- hwp_erp  
- intel_pt  
- rsb_ctxtsw  
- spec_ctrl  
- retpoline  
- kaiser  
- trp_shadow  
- vnmi  
- flexpriority  
- ept  
- vpid  
- fsgsbase  
- tsc_adjust  
- bmi1  
- hle  
- avx2  
- smep  
- bmi2  
- erms  
- invpcid  
- rtm  
- mpx  
- rdseed  
- adx  
- smap  
- clflushopt  
- xsaveopt  
- xsavec  
- xgetbv1

/proc/cpuinfo cache data  
- cache size: 8192 KB

From numactl --hardware  
WARNING: a numactl 'node' might or might not correspond to a physical chip.  
- available: 1 nodes (0)  
- node 0 cpus: 0 1 2 3  
- node 0 size: 32089 MB  
- node 0 free: 11807 MB  
- node distances:  
  - node 0  
    - 0: 10

From /proc/meminfo  
- MemTotal: 32860132 kB  
- HugePages_Total: 0  
- Hugepagesize: 2048 kB

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"

(Continued on next page)
Supermicro
SuperServer 5019C-L (X11SCL-IF , Intel Xeon E-2124G)

SPECrate2017_int_base = 24.0
SPECrate2017_int_peak = 25.6

Platform Notes (Continued)

uname -a:
    Linux linux-01g1 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

Kernel self-reported vulnerability status:
CVE-2017-5754 (Meltdown): Mitigation: PTI
CVE-2017-5753 (Spectre variant 1): Mitigation: Barriers
CVE-2017-5715 (Spectre variant 2): Mitigation: IBRS+IBPB

run-level 3 Oct 25 06:47

SPEC is set to: /home/cpu2017
Filesystem Type Size Used Avail Use% Mounted on
/dev/nvme0n1p4 xfs 435G 28G 408G 7% /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. 1.0 09/14/2018
Memory:
    2x Micron 18ADF2G72AZ-2G6H1R 16 GB 2 rank 2667

(End of data from sysinfo program)

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.
------------------------------------------------------------------------------

==============================================================================
CXXC 520.omnetpp_r(base) 523.xalancbmk_r(base) 531.deepsjeng_r(base)
(Continued on next page)
Supermicro
SuperServer 5019C-L (X11SCL-IF , Intel Xeon E-2124G)

SPECrate2017_int_base = 24.0
SPECrate2017_int_peak = 25.6

CPU2017 License: 001176
Test Sponsor: Supermicro
Test Date: Oct-2018
Hardware Availability: Nov-2018
Tested by: Supermicro
Software Availability: Mar-2018

Compiler Version Notes (Continued)

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.

FC 548.exchange2_r(peak)

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

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

(Continued on next page)
SPEC CPU2017 Integer Rate Result

Supermicro
SuperServer 5019C-L (X11SCL-IF, Intel Xeon E-2124G)

SPECrate2017_int_base = 24.0
SPECrate2017_int_peak = 25.6

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

Test Date: Oct-2018
Hardware Availability: Nov-2018
Software Availability: Mar-2018

Base Portability Flags (Continued)

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=3 -L/usr/local/je5.0.1-64/lib -ljemalloc

C++ benchmarks:
-Wl,-z,muldefs -xCORE-AVX2 -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-AVX2 -ipo -O3 -no-prec-div
-qopt-mem-layout-trans=3 -nostandard-realloc-lhs
- L/usr/local/je5.0.1-64/lib -ljemalloc

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
**SPEC CPU2017 Integer Rate Result**

Copyright 2017-2018 Standard Performance Evaluation Corporation

---

**Supermicro**

SuperServer 5019C-L (X11SCL-IF, Intel Xeon E-2124G)

---

<table>
<thead>
<tr>
<th>SPECrate2017_int_base</th>
<th>24.0</th>
</tr>
</thead>
<tbody>
<tr>
<td>SPECrate2017_int_peak</td>
<td>25.6</td>
</tr>
</tbody>
</table>

---

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

---

**Test Date:** Oct-2018  
**Hardware Availability:** Nov-2018  
**Software Availability:** Mar-2018

---

**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
- 545.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-AVX2 -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-AVX2 -O3 -no-prec-div -qopt-mem-layout-trans=3 -L/usr/local/je5.0.1-32/lib -ljemalloc
- 505.mcf_r: -Wl,-z,muldefs -prof-gen(pass 1) -prof-use(pass 2) -ipo -xCORE-AVX2 -O3 -no-prec-div -qopt-mem-layout-trans=3 -L/usr/local/je5.0.1-64/lib -ljemalloc
- 525.x264_r: -Wl,-z,muldefs -prof-gen(pass 1) -prof-use(pass 2) -ipo -xCORE-AVX2 -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-AVX2 -O3 -no-prec-div -qopt-mem-layout-trans=3 -L/usr/local/je5.0.1-32/lib -ljemalloc
- 531.deepsjeng_r: basepeak = yes

---

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

Supermicro
SuperServer 5019C-L (X11SCL-IF, Intel Xeon E-2124G)

SPECrade2017_int_base = 24.0
SPECrade2017_int_peak = 25.6

CPU2017 License: 001176
Test Sponsor: Supermicro
Test Date: Oct-2018
Tested by: Supermicro
Hardware Availability: Nov-2018
Software Availability: Mar-2018

Peak Optimization Flags (Continued)

541.leela_r: -Wl,-z,muldefs -prof-gen(pass 1) -prof-use(pass 2) -ipo
-xCORE-AVX2 -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

SPEC is a registered trademark 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 CPU2017 v1.0.5 on 2018-10-25 21:20:29-0400.
Originally published on 2018-11-27.