## SPEC® CPU2017 Integer Rate Result

**Supermicro**  
SuperWorkstation 5039A-i (X11SRA, Intel Xeon W-2155)

<table>
<thead>
<tr>
<th>SPECrate2017_int_base</th>
<th>SPECrate2017_int_peak</th>
</tr>
</thead>
<tbody>
<tr>
<td>65.1</td>
<td>69.8</td>
</tr>
</tbody>
</table>

**CPU2017 License:** 001176  
**Test Sponsor:** Supermicro  
**Tested by:** Supermicro  
**Test Date:** Sep-2018  
**Hardware Availability:** Jul-2017  
**Software Availability:** Feb-2018

### Hardware
- **CPU Name:** Intel Xeon W-2155  
  - **Max MHz.:** 4500  
  - **Nominal:** 3300  
  - **Enabled:** 10 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:** 13.75 MB I+D on chip per chip  
  - **Other:** None  
- **Memory:** 64 GB (4 x 16 GB 2Rx4 PC4-2666V-E)  
- **Storage:** 1 x 200 GB SATA III SSD  
- **Other:** None

### Software
- **OS:** SUSE Linux Enterprise Server 12 SP3 (x86_64)  
  - **Kernel:** 4.4.114-94.11-default  
- **Compiler:** C/C++: Version 18.0.0.128 of Intel C/C++  
  - **Compiler for Linux:** Fortran: Version 18.0.0.128 of Intel Fortran  
  - **Compiler for Linux:**  
- **Parallel:** No  
- **Firmware:** Supermicro BIOS version 1.2 released Aug-2018  
- **System State:** Run level 3 (multi-user)  
- **Base Pointers:** 64-bit  
- **Peak Pointers:** 32/64-bit  
- **Other:** jemalloc memory allocator library V5.0.1

### Results

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Copies</th>
<th>SPECrate2017_int_peak</th>
<th>SPECrate2017_int_base</th>
</tr>
</thead>
<tbody>
<tr>
<td>perlbench_r</td>
<td>20</td>
<td>69.8</td>
<td>65.1</td>
</tr>
<tr>
<td>gcc_r</td>
<td>20</td>
<td>62.3</td>
<td>53.5</td>
</tr>
<tr>
<td>mcf_r</td>
<td>20</td>
<td>79.6</td>
<td>66.3</td>
</tr>
<tr>
<td>omnetpp_r</td>
<td>20</td>
<td>36.5</td>
<td></td>
</tr>
<tr>
<td>xalancbmk_r</td>
<td>20</td>
<td>63.2</td>
<td></td>
</tr>
<tr>
<td>x264_r</td>
<td>20</td>
<td>71.7</td>
<td></td>
</tr>
<tr>
<td>deepsjeng_r</td>
<td>20</td>
<td>58.1</td>
<td></td>
</tr>
<tr>
<td>leela_r</td>
<td>20</td>
<td>55.9</td>
<td></td>
</tr>
<tr>
<td>exchange2_r</td>
<td>20</td>
<td>143</td>
<td>150</td>
</tr>
<tr>
<td>xz_r</td>
<td>20</td>
<td>43.0</td>
<td></td>
</tr>
</tbody>
</table>

---

**Supermicro**  
SuperWorkstation 5039A-i (X11SRA, Intel Xeon W-2155)  
Copyright 2017-2018 Standard Performance Evaluation Corporation
Supermicro
SuperWorkstation 5039A-i (X11SRA , Intel Xeon W-2155)

SPECrate2017_int_base = 65.1
SPECrate2017_int_peak = 69.8

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>
<th>Seconds</th>
<th>Ratio</th>
<th>Seconds</th>
<th>Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>500.perlbench_r</td>
<td>20</td>
<td>615</td>
<td>51.7</td>
<td>616</td>
<td>51.7</td>
<td>619</td>
<td>51.4</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>502.gcc_r</td>
<td>20</td>
<td>523</td>
<td>54.1</td>
<td>530</td>
<td>53.5</td>
<td>531</td>
<td>53.3</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>505.mcf_r</td>
<td>20</td>
<td>401</td>
<td>80.5</td>
<td>413</td>
<td>78.3</td>
<td>406</td>
<td>79.6</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>520.omnetpp_r</td>
<td>20</td>
<td>679</td>
<td>38.6</td>
<td>719</td>
<td>36.5</td>
<td>719</td>
<td>36.5</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>523.xalancbmk_r</td>
<td>20</td>
<td>333</td>
<td>63.4</td>
<td>335</td>
<td>63.1</td>
<td>334</td>
<td>63.2</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>525.x264_r</td>
<td>20</td>
<td>242</td>
<td>144</td>
<td>244</td>
<td>143</td>
<td>245</td>
<td>143</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>531.deepsjeng_r</td>
<td>20</td>
<td>388</td>
<td>59.1</td>
<td>395</td>
<td>58.1</td>
<td>395</td>
<td>58.1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>541.leela_r</td>
<td>20</td>
<td>594</td>
<td>55.8</td>
<td>591</td>
<td>56.1</td>
<td>593</td>
<td>55.9</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>548.exchange2_r</td>
<td>20</td>
<td>390</td>
<td>134</td>
<td>386</td>
<td>136</td>
<td>386</td>
<td>136</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>557.xz_r</td>
<td>20</td>
<td>500</td>
<td>43.2</td>
<td>502</td>
<td>43.0</td>
<td>502</td>
<td>43.0</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</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"
CPU frequency governor set with:
cupower -c all frequency-set -g performance

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 i7-4790 CPU + 32GB RAM
memory using Redhat Enterprise Linux 7.4
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

jemalloc: configured and built at default for 32bit (i686) and 64bit (x86_64) targets;
jemalloc: built with the RedHat Enterprise 7.4, and the system compiler gcc 4.8.5;

Yes: The test sponsor attests, as of date of publication, that CVE-2017-5754 (Meltdown)
**SPEC CPU2017 Integer Rate Result**  

**Supermicro**  
SuperWorkstation 5039A-i (X11SRA, Intel Xeon W-2155)  

<table>
<thead>
<tr>
<th>SPECrate2017_int_base = 65.1</th>
</tr>
</thead>
<tbody>
<tr>
<td>SPECrate2017_int_peak = 69.8</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>CPU2017 License: 001176</th>
<th>Test Date: Sep-2018</th>
</tr>
</thead>
<tbody>
<tr>
<td>Test Sponsor: Supermicro</td>
<td>Hardware Availability: Jul-2017</td>
</tr>
<tr>
<td>Tested by: Supermicro</td>
<td>Software Availability: Feb-2018</td>
</tr>
</tbody>
</table>

### 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

Sysinfo program /home/cpu2017/bin/sysinfo  
Rev: r5797 of 2017-06-14 96c45e4568ad54c135fd618bcc091c0f  
running on linux-k7zv Wed Sep 5 17:51:51 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) W-2155 CPU @ 3.30GHz  
    1 "physical id"s (chips)  
    20 "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 0 1 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): 20  
    On-line CPU(s) list: 0-19  
    Thread(s) per core: 2  
    Core(s) per socket: 10  
    Socket(s): 1  
    NUMA node(s): 1  
    Vendor ID: GenuineIntel  
    CPU family: 6  
    Model: 85  
    Model name: Intel(R) Xeon(R) W-2155 CPU @ 3.30GHz  
    Stepping: 4  
    CPU MHz: 1200.000  
    CPU max MHz: 3301.0000  
    CPU min MHz: 1200.0000  
    BogoMIPS: 6623.83  
    Virtualization: VT-x  

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

**Copyright 2017-2018 Standard Performance Evaluation Corporation**

**Supermicro**

SuperWorkstation 5039A-i (X11SRA, Intel Xeon W-2155)

<table>
<thead>
<tr>
<th>SPECrate2017_int_base</th>
<th>65.1</th>
</tr>
</thead>
<tbody>
<tr>
<td>SPECrate2017_int_peak</td>
<td>69.8</td>
</tr>
</tbody>
</table>

**CPU2017 License:** 001176

**Test Sponsor:** Supermicro

**Tested by:** Supermicro

**Test Date:** Sep-2018

**Hardware Availability:** Jul-2017

**Software Availability:** Feb-2018

---

**Platform Notes (Continued)**

L1d cache: 32K

L1i cache: 32K

L2 cache: 1024K

L3 cache: 14080K

NUMA node0 CPU(s): 0-19

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 rdtscp 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 xtpr pdcm 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 intel_pt rsb_ctxsw spec_ctrl retpoline kaiser tpr_shadow vnmi flexpriority ept vpid fsgsbase tsc_adjust bm1 hle avx2 smep bmi2 erms invpcid rtm cqm mpx avx512f avx512dq rdseed adx smap clflushopt clwb avx512cd avx512bw avx512vl xsaveopt xsaves xsavec xgetbv1 cqm_1l1c cqm_occup_llc

/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: 1 nodes (0)
    node 0 cpus: 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19
    node 0 size: 64118 MB
    node 0 free: 63319 MB
    node distances:
    node 0
    0: 10

From /proc/meminfo

    MemTotal: 65657740 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"

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

ANSI_COLOR="0;32"
CPE_NAME="cpe:/o:suse:sles:12:sp3"

uname -a:
Linux linux-k7zv 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 Sep 5 17:10

SPEC is set to: /home/cpu2017
Filesystem Type Size Used Avail Use% Mounted on
/dev/sda4 xfs 145G 13G 132G 9% /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. 1.2 08/23/2018
Memory:
4x Micron 18ADF2G72AZ-2G6H1R 16 GB 2 rank 2666
4x NO DIMM NO DIMM

(End of data from sysinfo program)

Compiler Version Notes

==============================================================================
CC  500.perlbench_r(base) 502.gcc_r(base) 505.mcf_r(base, peak)
   525.x264_r(base, peak) 557.xz_r(base, peak)
==============================================================================
icc (ICC) 18.0.0 20170811
Copyright (C) 1985-2017 Intel Corporation. All rights reserved.
==============================================================================

Cc  500.perlbench_r(peak) 502.gcc_r(peak)
==============================================================================
icc (ICC) 18.0.0 20170811
Copyright (C) 1985-2017 Intel Corporation. All rights reserved.
==============================================================================

CXXC 520.omnetpp_r(base, peak) 523.xalancbmk_r(base) 531.deepsjeng_r(base, peak)
   541.leela_r(base)

icpc (ICC) 18.0.0 20170811

(Continued on next page)
Supermicro
SuperWorkstation 5039A-i (X11SRA, Intel Xeon W-2155)

SPECrate2017_int_base = 65.1
SPECrate2017_int_peak = 69.8

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

Compiler Version Notes (Continued)
Copyright (C) 1985-2017 Intel Corporation. All rights reserved.

CXXC 523.xalancbmk_r(peak) 541.leela_r(peak)

icpc (ICC) 18.0.0 20170811
Copyright (C) 1985-2017 Intel Corporation. All rights reserved.

Base Compiler Invocation
C benchmarks:
iccc

C++ benchmarks:
icpc

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
Supermicro
SuperWorkstation 5039A-i (X11SRA, Intel Xeon W-2155)

SPEC CPU2017 Integer Rate Result

Copyright 2017-2018 Standard Performance Evaluation Corporation

<table>
<thead>
<tr>
<th>Spec CPU2017 License: 001176</th>
<th>Test Date: Sep-2018</th>
</tr>
</thead>
<tbody>
<tr>
<td>Test Sponsor: Supermicro</td>
<td>Hardware Availability: Jul-2017</td>
</tr>
<tr>
<td>Tested by: Supermicro</td>
<td>Software Availability: Feb-2018</td>
</tr>
</tbody>
</table>

SPECrate2017_int_base = 65.1
SPECrate2017_int_peak = 69.8

**Base Optimization Flags**

C benchmarks:
-Wl,-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:
-Wl,-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:
-Wl,-z,muldefs -xCORE-AVX512 -ipo -O3 -no-prec-div
-qopt-mem-layout-trans=3 -nostandard-realloc-lhs -align array32byte
-L/usr/local/je5.0.1-64/lib -ljemalloc

**Base Other Flags**

C benchmarks:
-m64 -std=c11

C++ benchmarks:
-m64

Fortran benchmarks:
-m64

**Peak Compiler Invocation**

C benchmarks:
icc

C++ benchmarks:
icpc

Fortran benchmarks:
ifort

**Peak Portability Flags**

500.perlbench_r: -DSPEC_LP64 -DSPEC_LINUX_X64
502.gcc_r: -D_FILE_OFFSET_BITS=64

(Continued on next page)
Peak Portability Flags (Continued)

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
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 -03 -no-prec-div -qopt-mem-layout-trans=3
-fno-strict-overflow -L/usr/local/je5.0.1-64/lib
-ljemalloc

502.gcc_r: -L/opt/intel/compilers_and_libraries_2018/linux/lib/ia32
-Wl,-z,muldefs -prof-gen(pass 1) -prof-use(pass 2) -ipo
-xCORE-AVX512 -03 -no-prec-div -qopt-mem-layout-trans=3
-L/usr/local/je5.0.1-32/lib -ljemalloc

505.mcf_r: basepeak = yes

525.x264_r: -Wl,-z,muldefs -xCORE-AVX512 -ipo -03 -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: -L/opt/intel/compilers_and_libraries_2018/linux/lib/ia32
-Wl,-z,muldefs -prof-gen(pass 1) -prof-use(pass 2) -ipo
-xCORE-AVX512 -03 -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 -03 -no-prec-div -qopt-mem-layout-trans=3

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

**Supermicro**  
SuperWorkstation 5039A-i (X11SRA, Intel Xeon W-2155)

<table>
<thead>
<tr>
<th>CPU2017 License:</th>
<th>001176</th>
<th>Test Sponsor:</th>
<th>Supermicro</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tested by:</td>
<td>Supermicro</td>
<td>Test Date:</td>
<td>Sep-2018</td>
</tr>
<tr>
<td>Hardware Availability:</td>
<td>Jul-2017</td>
<td>Software Availability:</td>
<td>Feb-2018</td>
</tr>
</tbody>
</table>

**SPECrate2017_int_base** = 65.1  
**SPECrate2017_int_peak** = 69.8

---

#### Peak Optimization Flags (Continued)

541.leela_r (continued):
- `-L/usr/local/je5.0.1-64/lib -ljemalloc`

Fortran benchmarks:
- `-Wl,-z,muldefs -xCORE-AVX512 -ipo -O3 -no-prec-div`  
- `-qopt-mem-layout-trans=3 -nostandard-realloc-lhs -align array32byte`  
- `-L/usr/local/je5.0.1-64/lib -ljemalloc`

---

#### Peak Other Flags

C benchmarks (except as noted below):
- `m64 -std=c11`

502.gcc_r: `-m32 -std=c11`

C++ benchmarks (except as noted below):
- `m64`

523.xalancbfmk_r: `-m32`

Fortran benchmarks:
- `m64`

The flags files that were used to format this result can be browsed at:
- [http://www.spec.org/cpu2017/flags/Intel-ic18.0-official-linux64.html](http://www.spec.org/cpu2017/flags/Intel-ic18.0-official-linux64.html)

You can also download the XML flags sources by saving the following links:
- [http://www.spec.org/cpu2017/flags/Intel-ic18.0-official-linux64.xml](http://www.spec.org/cpu2017/flags/Intel-ic18.0-official-linux64.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 v1.0.2 on 2018-09-05 05:51:50-0400.  
Originally published on 2018-10-16.