### SPEC CPU®2017 Integer Speed Result

#### Supermicro

SuperServer 5019C-WR (X11SCW-F, Intel Xeon E-2286G)

<table>
<thead>
<tr>
<th>SPECspeed®2017_int_peak</th>
<th>SPECspeed®2017_int_base</th>
</tr>
</thead>
<tbody>
<tr>
<td>9.62</td>
<td>8.94</td>
</tr>
</tbody>
</table>

#### Performance Results

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Threads</th>
<th>SPECspeed®2017_int_base</th>
<th>SPECspeed®2017_int_peak</th>
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<tr>
<td>perlbench</td>
<td>12</td>
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<td>4.72</td>
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<td>gcc</td>
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<td>9.87</td>
<td>11.3</td>
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<td>mcf</td>
<td>12</td>
<td>4.52</td>
<td>5.98</td>
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<td>omnetpp</td>
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<td></td>
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<tr>
<td>xalancbmk</td>
<td>12</td>
<td>8.41</td>
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<tr>
<td>x264</td>
<td>12</td>
<td></td>
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<tr>
<td>deepsjeng</td>
<td>12</td>
<td>6.36</td>
<td>6.57</td>
</tr>
<tr>
<td>leela</td>
<td>12</td>
<td>5.17</td>
<td></td>
</tr>
<tr>
<td>exchange2</td>
<td>12</td>
<td></td>
<td></td>
</tr>
<tr>
<td>xz</td>
<td>12</td>
<td>21.2</td>
<td>14.3</td>
</tr>
</tbody>
</table>

#### Hardware

- **CPU Name:** Intel Xeon E-2286G
- **Max MHz:** 4900
- **Nominal:** 4000
- **Enabled:** 6 cores, 1 chip, 2 threads/core
- **Orderable:** 1 chip
- **Cache L1:** 32 KB I + 32 KB D on chip per core
- **L2:** 256 KB I+D on chip per core
- **L3:** 12 MB I+D on chip per core
- **Memory:** 64 GB (4 x 16 GB 2Rx8 PC4-2666V-E)
- **Storage:** 1 x 200 GB SATA III SSD

#### Software

- **OS:** SUSE Linux Enterprise Server 12 SP4 (x86_64)
- **Kernel:** 4.12.14-94.41-default
- **Compiler:** C/C++: Version 19.0.4.227 of Intel C/C++ Compiler for Linux;
  Fortran: Version 19.0.4.227 of Intel Fortran Compiler for Linux
- **Parallel:** Yes
- **Firmware:** Version 1.0b released May-2019
- **File System:** xfs
- **System State:** Run level 3 (multi-user)
- **Base Pointers:** 64-bit
- **Peak Pointers:** 64-bit
- **Other:** jemalloc memory allocator V5.0.1
- **Power Management:** --
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**CPU2017 License:** 001176  
**Test Date:** Nov-2019  
**Test Sponsor:** Supermicro  
**Hardware Availability:** May-2019  
**Tested by:** Supermicro  
**Software Availability:** May-2019

### Results Table

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Threads</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>
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<td>3.53</td>
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<td>605.mcf_s</td>
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<td><strong>16.3</strong></td>
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<td>620.omnetpp_s</td>
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<tr>
<td>631.deepsjeng_s</td>
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<td>225</td>
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<td><strong>5.17</strong></td>
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<tr>
<td>648.exchange2_s</td>
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</tr>
</tbody>
</table>

**SPECspeed®2017_int_base =** 8.94  
**SPECspeed®2017_int_peak =** 9.62

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

### 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:

- KMP_AFFINITY = "granularity=fine,scatter"
- LD_LIBRARY_PATH = "/home/cpu2017/lib/intel64:/home/cpu2017/je5.0.1-64"  
- OMP_STACKSIZE = "192M"

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

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

Supermicro
SuperServer 5019C-WR (X11SCW-F, Intel Xeon E-2286G)

SPECspeed®2017_int_base = 8.94
SPECspeed®2017_int_peak = 9.62

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

Test Date: Nov-2019
Hardware Availability: May-2019
Software Availability: May-2019

General Notes (Continued)

Platform Notes

Sysinfo program /home/cpu2017/bin/sysinfo
Rev: r6365 of 2019-08-21 295195f888a3d7eduble6e46a485a0011
running on linux Sat Nov 23 19:41:51 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) E-2286G CPU @ 4.00GHz
  1 "physical id"s (chips)
  12 "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: 6
  siblings: 12
  physical 0: cores 0 1 2 3 4 5

From lscpu:
  Architecture: x86_64
  CPU op-mode(s): 32-bit, 64-bit
  Byte Order: Little Endian
  CPU(s): 12
  On-line CPU(s) list: 0-11
  Thread(s) per core: 2
  Core(s) per socket: 6
  Socket(s): 1
  NUMA node(s): 1
  Vendor ID: GenuineIntel
  CPU family: 6
  Model: 158
  Model name: Intel(R) Xeon(R) E-2286G CPU @ 4.00GHz
  Stepping: 10
  CPU MHz: 4000.000
  CPU max MHz: 4900.0000
  CPU min MHz: 800.0000
  BogoMIPS: 8016.00
  Virtualization: VT-x
  L1d cache: 32K
  L1i cache: 32K
  L2 cache: 256K

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

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Supermicro
SuperServer 5019C-WR (X11SCW-F, Intel Xeon E-2286G) Specspeed®2017_int_base = 8.94
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Test Sponsor: Supermicro
Tested by: Supermicro

Platform Notes (Continued)

L3 cache: 12288K
NUMA node0 CPU(s): 0-11
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 pdpmlgb rdtscp
lm constant_tsc art arch_perfmon pebs bts rep_good nopl xtopology nonstop_tsc cpuid
aperfmperf tsc_known_freq pni pclmulqdq dtes64 monitor ds_cpl vmx smx est tm2 ssse3
sdbg fma cx16 xtpr pdcm pcid sse4_1 sse4_2 x2apic movbe popcnt tsc_deadline_timer
aes xsave avx f16c rdrand lahf_lm abm 3dnowprefetch cpuid_fault epb invpcid_single
pti ssbd ibrs ibpb stibp tpr_shadow vmmvx flexpriority ept vpid fsgsbase tsc_adjust
bmi1 hle avx2 smep bmi2 emms invpcid rtm mdx smep xsaveopt xsavec xsaves dtherm ida arat
pln pts hwp hwp_notify hwp_act_window hwp_epp flush_l1d

/proc/cpuinfo cache data
  cache size: 12288 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
  node 0 size: 64316 MB
  node 0 free: 46620 MB
  node distances:
    node 0
    0: 10

From /proc/meminfo
  MemTotal: 65860384 kB
  HugePages_Total: 0
  Hugepagesize: 2048 KB

From /etc/*release* /etc/*version*
  SuSE-release:
    SUSE Linux Enterprise Server 12 (x86_64)
    VERSION = 12
    PATCHLEVEL = 4
    # 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-SP4"
    VERSION_ID="12.4"
    PRETTY_NAME="SUSE Linux Enterprise Server 12 SP4"
    ID="sles"
    ANSI_COLOR="0;32"
    CPE_NAME="cpe:/o:suse:sles:12:sp4"

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---

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---

**Platform Notes (Continued)**

```
uname -a:
x86_64 x86_64 GNU/Linux

Kernel self-reported vulnerability status:

CVE-2018-3620 (L1 Terminal Fault): Mitigation: PTE Inversion; VMX: conditional
    cache flushes, SMT vulnerable
Microarchitectural Data Sampling: No status reported
CVE-2017-5754 (Meltdown): Mitigation: PTI
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
CVE-2017-5715 (Spectre variant 2): Mitigation: Indirect Branch Restricted
    Speculation, IBPB, IBRS_FW

run-level 3 Nov 22 20:46

SPEC is set to: /home/cpu2017
Filesystem     Type  Size  Used Avail Use% Mounted on
/dev/sda3      xfs   145G   19G  126G  13% /home

From /sys/devices/virtual/dmi/id
    BIOS: American Megatrends Inc. 1.0b 05/16/2019
    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 Micron 18ADF2G72AZ-2G6H1R 16 GB 2 rank 2667

(End of data from sysinfo program)
```

---

**Compiler Version Notes**

```
600.perlbench_s(base, peak) 602.gcc_s(base, peak) 605.mcf_s(base, peak)
625.x264_s(base, peak) 657.xz_s(base, peak)
```

---

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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### Compiler Version Notes (Continued)

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#### C++

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<tr>
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<td>623.xalancbmk_s</td>
<td>-DSPEC_LP64 -DSPEC_LINUX</td>
</tr>
<tr>
<td>631.deepsjeng_s</td>
<td>-DSPEC_LP64</td>
</tr>
<tr>
<td>641.leela_s</td>
<td>-DSPEC_LP64</td>
</tr>
</tbody>
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#### Fortran

<table>
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<tr>
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<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>648.exchange2_s</td>
<td>-DSPEC_LP64</td>
</tr>
</tbody>
</table>

---

### Base Compiler Invocation

**C benchmarks:**

```bash
icc -m64 -std=c11
```

**C++ benchmarks:**

```bash
icpc -m64
```

**Fortran benchmarks:**

```bash
ifort -m64
```

---

### Base Portability Flags

```
600.perlbench_s: -DSPEC_LP64 -DSPEC_LINUX_X64
602.gcc_s: -DSPEC_LP64
605.mcf_s: -DSPEC_LP64
620.omnetpp_s: -DSPEC_LP64
623.xalancbmk_s: -DSPEC_LP64 -DSPEC_LINUX
625.x264_s: -DSPEC_LP64
631.deepsjeng_s: -DSPEC_LP64
641.leela_s: -DSPEC_LP64
648.exchange2_s: -DSPEC_LP64
657.xz_s: -DSPEC_LP64
```
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Base Optimization Flags

C benchmarks:
-Wl,-z,muldefs -xCORE-AVX2 -ipo -O3 -no-prec-div
-qopt-mem-layout-trans=4 -qopenmp -DSPEC_OPENMP
-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=4
-L/usr/local/IntelCompiler19/compilers_and_libraries_2019.4.227/linux/compiler/lib/intel64
-lqkmalloc

Fortran benchmarks:
-xCORE-AVX2 -ipo -O3 -no-prec-div -qopt-mem-layout-trans=4
-nostandard-realloc-lhs

Peak Compiler Invocation

C benchmarks:
icc -m64 -std=c11

C++ benchmarks:
icpc -m64

Fortran benchmarks:
ifort -m64

Peak Portability Flags

Same as Base Portability Flags

Peak Optimization Flags

C benchmarks:
600.perlbench_s: -Wl,-z,muldefs -prof-gen(pass 1) -prof-use(pass 2) -O2
-xCORE-AVX2 -qopt-mem-layout-trans=4 -ipo -O3
-no-prec-div -DSPEC_SUPPRESS_OPENMP -qopenmp
-DSPEC_OPENMP -fno-strict-overflow
-L/usr/local/je5.0.1-64/lib -ljemalloc

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

602.gcc_s: -Wl,-z,muldefs -prof-gen(pass 1) -prof-use(pass 2) -O2
-xCORE-AVX2 -qopt-mem-layout-trans=4 -ipo -O3
-no-prec-div -DSPEC_SUPPRESS_OPENMP
-L/usr/local/je5.0.1-64/lib -ljemalloc

605.mcf_s: -Wl,-z,muldefs -prof-gen(pass 1) -prof-use(pass 2) -ipo
-xCORE-AVX2 -O3 -no-prec-div -qopt-mem-layout-trans=4
-DSPEC_SUPPRESS_OPENMP -qopenmp -DSPEC_OPENMP
-L/usr/local/je5.0.1-64/lib -ljemalloc

625.x264_s: -Wl,-z,muldefs -xCORE-AVX2 -ipo -O3 -no-prec-div
-qopt-mem-layout-trans=4 -qopenmp -DSPEC_OPENMP
-L/usr/local/je5.0.1-64/lib -ljemalloc

657.xz_s: -Wl,-z,muldefs -xCORE-AVX2 -ipo -O3 -no-prec-div
-qopt-mem-layout-trans=4 -ipo -O3
-no-prec-div -DSPEC_SUPPRESS_OPENMP -qopenmp
-DSPEC_OPENMP -L/usr/local/je5.0.1-64/lib -ljemalloc

C++ benchmarks:

620.omnetpp_s: -Wl,-z,muldefs -prof-gen(pass 1) -prof-use(pass 2) -ipo
-xCORE-AVX2 -O3 -no-prec-div -qopt-mem-layout-trans=4
-DSPEC_SUPPRESS_OPENMP
-L/usr/local/Intel Compiler19/compilers_and_libraries_2019.4.227/linux/compiler/lib/intel64
-lqkmalloc

623.xalancbmk_s: basepeak = yes

631.deepsjeng_s: -Wl,-z,muldefs -xCORE-AVX2 -ipo -O3 -no-prec-div
-qopt-mem-layout-trans=4
-L/usr/local/Intel Compiler19/compilers_and_libraries_2019.4.227/linux/compiler/lib/intel64
-lqkmalloc

641.leela_s: basepeak = yes

Fortran benchmarks:

648.exchange2_s: basepeak = yes

The flags files that were used to format this result can be browsed at
Supermicro
SuperServer 5019C-WR (X11SCW-F, Intel Xeon E-2286G)

**SPECspeed**

- SPECspeed\(^\text{®}2017\)_int_base = 8.94
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**Test Sponsor:** Supermicro
**Tested by:** Supermicro
**Test Date:** Nov-2019
**Hardware Availability:** May-2019
**Software Availability:** May-2019

You can also download the XML flags sources by saving the following links:


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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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