# SPEC CPU®2017 Integer Speed Result

**Cisco Systems**

Cisco UCS B200 M5 (Intel Xeon Gold 6252N, 2.30GHz)

<table>
<thead>
<tr>
<th>CPLU2017 License</th>
<th>Test Date</th>
<th>Hardware Availability</th>
<th>Software Availability</th>
</tr>
</thead>
<tbody>
<tr>
<td>9019</td>
<td>Aug-2019</td>
<td>Apr-2019</td>
<td>May-2019</td>
</tr>
</tbody>
</table>

## CPU Details

- **CPU Name:** Intel Xeon Gold 6252N
- **Max MHz:** 3600
- **Nominal:** 2300
- **Enabled:** 48 cores, 2 chips
- **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:** 35.75 MB I+D on chip per chip
- **Other:** None
- **Memory:** 768 GB (24 x 32 GB 2Rx4 PC4-2933V-R)
- **Storage:** 1 x 1.9 TB SSD SAS
- **Other:** None

## Software Details

- **OS:** SUSE Linux Enterprise Server 15 4.12.14-23-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 4.0.4b released Apr-2019
- **File System:** xfs
- **System State:** Run level 3 (multi-user)
- **Base Pointers:** 64-bit
- **Peak Pointers:** Not Applicable
- **Other:** jemalloc memory allocator V5.0.1
- **Power Management:** --

## Result

<table>
<thead>
<tr>
<th>SPECspeak®2017_int_base</th>
<th>SPECspeak®2017_int_peak</th>
</tr>
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<tbody>
<tr>
<td>9.69</td>
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### SPECspeed®2017_int_base (9.69)

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### Benchmark Results

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Threads</th>
<th>SPECspeed®2017_int_base</th>
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<tbody>
<tr>
<td>600.perbench_s</td>
<td>48</td>
<td>6.42</td>
<td>9.35</td>
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<tr>
<td>602.gcc_s</td>
<td>48</td>
<td>11.9</td>
<td></td>
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<td>605.mcf_s</td>
<td>48</td>
<td>8.47</td>
<td></td>
</tr>
<tr>
<td>620.omnetpp_s</td>
<td>48</td>
<td>11.6</td>
<td></td>
</tr>
<tr>
<td>623.xalancbmk_s</td>
<td>48</td>
<td>13.6</td>
<td></td>
</tr>
<tr>
<td>625.x264_s</td>
<td>48</td>
<td>5.11</td>
<td>15.4</td>
</tr>
<tr>
<td>631.deepsjeng_s</td>
<td>48</td>
<td>4.41</td>
<td></td>
</tr>
<tr>
<td>641.leela_s</td>
<td>48</td>
<td></td>
<td></td>
</tr>
<tr>
<td>648.exchange2_s</td>
<td>48</td>
<td></td>
<td></td>
</tr>
<tr>
<td>657.xz_s</td>
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### Results Table

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Threads</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Seconds</th>
<th>Ratio</th>
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<tr>
<td>600.perlbench_s</td>
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<td>602.gcc_s</td>
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<tr>
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<td>620.omnetpp_s</td>
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<td>623.xalancbmk_s</td>
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<td>123</td>
<td>11.5</td>
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<td>15.3</td>
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<td>657.xz_s</td>
<td>48</td>
<td>281</td>
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<td>281</td>
<td>22.0</td>
<td><strong>281</strong></td>
<td><strong>22.0</strong></td>
</tr>
</tbody>
</table>

### 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:

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

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:

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

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.

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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) Gold 6252N CPU @ 2.30GHz
  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: 24
siblings: 24
physical 0: cores 0 1 2 3 4 5 6 8 9 10 11 12 13 16 17 18 19 20 21 25 26 27 28 29
physical 1: cores 0 1 2 3 4 5 6 8 9 10 11 12 13 16 17 18 19 20 21 25 26 27 28 29

From lscpu:
Architecture: x86_64
CPU op-mode(s): 32-bit, 64-bit
Byte Order: Little Endian
CPU(s): 48
On-line CPU(s) list: 0-47
Thread(s) per core: 1
Core(s) per socket: 24
Socket(s):
NUMA node(s):
Vendor ID:
GenuineIntel
CPU family: 6
Model: 85
Model name: Intel(R) Xeon(R) Gold 6252N CPU @ 2.30GHz
Stepping: 7
CPU MHz: 2300.000
CPU max MHz: 3600.0000
CPU min MHz: 1000.0000
BogoMIPS: 4600.00
Virtualization: VT-x
L1d cache: 32K

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SPECspeed®2017_int_peak = Not Run

CPU2017 License: 9019
Test Sponsor: Cisco Systems
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Test Date: Aug-2019
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Software Availability: May-2019

Platform Notes (Continued)

L1i cache: 32K
L2 cache: 1024K
L3 cache: 36608K
NUMA node0 CPU(s): 0-23
NUMA node1 CPU(s): 24-47
Flags: fpu vme de pse tsc msr pae 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 cpuid aperfmperf tsc_known_freq pni pclmulqdq dtes64 monitor ds_cpl vmx smx est tm2 ssse3 sdmb fma cx16 xtpre pdcm pcid dca sse4_1 sse4_2 x2apic movbe popcnt tsc_deadline_timer aes xsave avx f16c rdrand lahf_lm abm 3dnowprefetch cpuid_fault epb cat_13 cdp_l3 invpcid_single intel_ppin mba tpr_shadow vnmi fnsnp ept vpid fsgsbase tsc_adjust bmi1 hle avx2 smep bmi2 erms invpcid rtm cqm mpx rdt_a avx512f avx512dq rdseed adx smap clflushopt clwb intel_pti avx512cd avx512bw avx512vl xsavesopt xsavec xsavec cqm_llc cqm_occcll ocq_mbb_total cqm_mbb_local ibpb ibrs stibp dtherm ida arat pln pts hwp hwp_act_window hwp_epp hwp/pkg_req pk uospke avx512_vnni arch_capabilities ssbd

/proc/cpuinfo cache data
  cache size : 36608 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 10 11 12 13 14 15 16 17 18 19 20 21 22 23
  node 0 size: 385586 MB
  node 0 free: 384914 MB
  node 1 cpus: 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47
  node 1 size: 387044 MB
  node 1 free: 386475 MB
  node distances:
    node 0 1
    0: 10 21
    1: 21 10

From /proc/meminfo
  MemTotal: 791174132 kB
  HugePages_Total: 0
  Hugepagesize: 4096 kB

From /etc/*release*/etc/*version*
  os-release:
    NAME="SLES"
    VERSION="15"
    VERSION_ID="15"
    PRETTY_NAME="SUSE Linux Enterprise Server 15"
    ID="sles"
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Platform Notes (Continued)

```
ID_LIKE="suse"
ANSI_COLOR="0;32"
CPE_NAME="cpe:/o:suse:sles:15"
```

```
uname -a:
    Linux linux-aixk 4.12.14-23-default #1 SMP Tue May 29 21:04:44 UTC 2018 (cd0437b)
    x86_64 x86_64 x86_64 GNU/Linux
```

```
run-level 3 Sep 12 21:05
SPEC is set to: /home/cpu2017
```

```
Filesystem Type Size  Used Avail Use% Mounted on
/dev/sdb6    xfs  45G   13G   33G  28% /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 Cisco Systems, Inc. B200M5.4.0.4b.0.0407191258 04/07/2019
Memory: 24x 0xCE00 M393A4K40CB2-CVF 32 GB 2 rank 2933, configured at 2934

(End of data from sysinfo program)

Compiler Version Notes

```
C       | 600.perlbench_s(base) 602.gcc_s(base) 605.mcf_s(base)
| 625.x264_s(base) 657.xz_s(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++     | 620.omnetpp_s(base) 623.xalancbmk_s(base) 631.deepsjeng_s(base)
| 641.leela_s(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.
```

```
Fortran | 648.exchange2_s(base)
```

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Intel(R) Fortran 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.

Base Compiler Invocation

C benchmarks:
icc -m64 -std=c11

C++ benchmarks:
icpc -m64

Fortran benchmarks:
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

Base Optimization Flags

C benchmarks:
-W1, -z,muldefs -xCORE-AVX512 -ipo -O3 -no-prec-div
-qopt-mem-layout-trans=4 -qopenmp -DSPEC_OPENMP
-1/usr/local/je5.0.1-64/lib -ljemalloc

C++ benchmarks:
-W1, -z,muldefs -xCORE-AVX512 -ipo -O3 -no-prec-div
-qopt-mem-layout-trans=4
-1/usr/local/IntelCompiler19/compilers_and_libraries_2019.4.227/linux/compiler/lib/intel64
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### Base Optimization Flags (Continued)

**C++ benchmarks (continued):**
- -lqkmalloc

**Fortran benchmarks:**
- -xCORE-AVX512 -ipo -O3 -no-prec-div -qopt-mem-layout-trans=4
- -nostandard-realloc-lhs

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:

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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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