# SPEC CPU®2017 Integer Speed Result

## Lenovo Global Technology
ThinkSystem SR630  
(2.30 GHz, Intel Xeon Gold 6230N)

<table>
<thead>
<tr>
<th>SPECspeed®2017_int_base</th>
<th>10.3</th>
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<tbody>
<tr>
<td>SPECspeed®2017_int_peak</td>
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**CPU2017 License:** 9017

**Test Sponsor:** Lenovo Global Technology

**Tested by:** Lenovo Global Technology

**Hardware Availability:** Jul-2019

**Test Date:** Aug-2019

**Software Availability:** May-2019

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--- SPECspeed®2017_int_base (10.3)

**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;

**Parallel:** Yes

**Firmware:** Lenovo BIOS Version IVE142E 2.30 released Aug-2019  
tested as IVE141E 2.30 Jul-2019

**File System:** btrfs

**System State:** Run level 3 (multi-user)

**Base Pointers:** 64-bit

**Peak Pointers:** Not Applicable

**Other:** jemalloc memory allocator V5.0.1

**Power Management:** --

---

**Hardware**

**CPU Name:** Intel Xeon Gold 6230N  
Max MHz: 3500

**Nominal:** 2300

**Enabled:** 40 cores, 2 chips, 2 threads/core

**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:** 27.5 MB I+D on chip per chip

**Other:** None

**Memory:** 384 GB (24 x 16 GB 2Rx8 PC4-2933Y-R)

**Storage:** 1 x 800 GB SATA SSD

**Other:** None
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(2.30 GHz, Intel Xeon Gold 6230N)

CPU2017 License: 9017
Test Sponsor: Lenovo Global Technology
Tested by: Lenovo Global Technology

Results Table

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</table>

SPEC\textsuperscript{2017\_int\_base} = 10.3
SPEC\textsuperscript{2017\_int\_peak} = Not Run

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"

General Notes

Environment variables set by runcpu before the start of the run:
KMP\textsuperscript{AFFINITY} = "granularity=fine,scatter"
LD\textsubscript{LIBRARY\_PATH} = "/home/cpu2017-1.0.5-ic19.0u4/lib/intel64"
LD\textsubscript{LIBRARY\_PATH} = "$LD\textsubscript{LIBRARY\_PATH}:/home/cpu2017-1.0.5-ic19.0u4/je5.0.1-64"
OMP\textsubscript{STACKSIZE} = "192M"

Binaries compiled on a system with 1x Intel Core i9-799X 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.
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.
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)
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SPECspeed®2017_int_base = 10.3
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CPU2017 License: 9017
Test Sponsor: Lenovo Global Technology
Tested by: Lenovo Global Technology

Test Date: Aug-2019
Hardware Availability: Jul-2019
Software Availability: May-2019

General Notes (Continued)

Platform Notes

BIOS configuration:
Choose Operating Mode set to Maximum Performance
Choose Operating Mode set to Custom Mode
C-States set to Legacy
Sysinfo program /home/cpu2017-1.0.5-ic19.0u4/bin/sy
Rev: r5974 of 2018-05-19 9bcd8f2999c33d61f64985e45859ea9
running on linux-x8si Wed Aug 21 11:59:55 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) Gold 6230N CPU @ 2.30GHz
  2 "physical id"s (chips)
  80 "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 : 20
  siblings : 40
  physical 0: cores 0 1 2 3 4 8 9 10 11 12 16 17 18 19 20 24 25 26 27 28
  physical 1: cores 0 1 2 3 4 8 9 10 11 12 16 17 18 19 20 24 25 26 27 28

From lscpu:
Architecture: x86_64
CPU op-mode(s): 32-bit, 64-bit
Byte Order: Little Endian
CPU(s): 80
On-line CPU(s) list: 0-79
Thread(s) per core: 2
Core(s) per socket: 20
Socket(s): 2
NUMA node(s): 2
Vendor ID: GenuineIntel
CPU family: 6
Model: 85
Model name: Intel(R) Xeon(R) Gold 6230N CPU @ 2.30GHz
Stepping: 6
CPU MHz: 2300.000
CPU max MHz: 3900.000
CPU min MHz: 800.000
BogoMIPS: 4600.00

(Continued on next page)
Lenovo Global Technology

ThinkSystem SR630

(2.30 GHz, Intel Xeon Gold 6230N)

<table>
<thead>
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<th>Product</th>
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**Platform Notes (Continued)**

Virtualization: VT-x
L1d cache: 32K
L1i cache: 32K
L2 cache: 1024K
L3 cache: 28160K
NUMA node0 CPU(s): 0-19, 40-59
NUMA node1 CPU(s): 20-39, 60-79
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_82 art arch_perfmon pebs bts rep_good nopl xtopology nonstop_tsc cpuid aperfmperf pni pclmulqdq dtes64 monitor ds_cpl vmx smx est tm2 ssse3 sdbg fma cx16 xtrr pdcm pcid dca sse4_1 sse4_2 x2apic movbe popcnt tsc_deadline_timer aes xsave avx f16c rdrand lahf_lm abm 3nowprefetch cpuid_fault epb cat _13 cdp _13
invpcid_single intel_ppin ssbd mba ibrs ibpb stibp tpr_shadow vnni flexpriority ept vpid fsgsbase tsc_adjust bm1 hle avx2 smep bmi2 erms invpcid rtm cqm mpx rdt_a avx512f avx512dq rdseed adx smap clflushopt clwb intel_pt avx512cd avx512bw avx512vl xsaveopt xsavec xgetbv1 xsaves cqm_llc cqm_occup_llc cqm_mbm_total cqm_mbm_local

dtherm ida arat pin pts pku ospke avx512_vnni flush_lld arch_capabilities

/proc/cpuinfo cache data
  cache size : 28160 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 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59
  node 0 size: 193118 MB
  node 0 free: 192693 MB
  node 1 cpus: 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79
  node 1 size: 193476 MB
  node 1 free: 192170 MB
  node distances:
    node 0 1
    0: 10 21
    1: 21 10

From /proc/meminfo
  MemTotal: 395873580 kB
  HugePages_Total: 0
  Hugepagesize: 2048 kB

From /etc/*release* /etc/*version*
  SuSE-release:
    SUSE Linux Enterprise Server 12 (x86_64)
    VERSION = 12

(Continued on next page)
## Lenovo Global Technology

**ThinkSystem SR630  
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<table>
<thead>
<tr>
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### SPECspeed®2017_int_base = 10.3

### SPECspeed®2017_int_peak = Not Run

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### Platform Notes (Continued)

- 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"
  ```

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

### Kernel self-reported vulnerability status:

- CVE-2017-5754 (Meltdown): Not affected
- 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 Aug 21 09:42

- SPEC is set to: /home/cpu2017-1.0.5-ic19.0u4

### 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 Lenovo -[IVE141E-2.30]- 07/02/2019

#### Memory:

- 24x Samsung M393A2K43CB2-CVF 16 GB 2 rank 2933

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### Compiler Version Notes

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Page 5 Standard Performance Evaluation Corporation (info@spec.org) https://www.spec.org/
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SPECspeed®2017_int_base = 10.3
SPECspeed®2017_int_peak = Not Run

Compiler Version Notes (Continued)

Version 19.0.4.227 Build 20190416
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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

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### Base Portability Flags (Continued)

657.xz_s: -DSPEC_LP64

### 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

The flags files that were used to format this result can be browsed at:

- [http://www.spec.org/cpu2017/flags/Lenovo-Platform-SPECcpu2017-Flags-V1.2-CLX-D.html](http://www.spec.org/cpu2017/flags/Lenovo-Platform-SPECcpu2017-Flags-V1.2-CLX-D.html)

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

- [http://www.spec.org/cpu2017/flags/Lenovo-Platform-SPECcpu2017-Flags-V1.2-CLX-D.xml](http://www.spec.org/cpu2017/flags/Lenovo-Platform-SPECcpu2017-Flags-V1.2-CLX-D.xml)

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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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