



# SPEC CPU®2017 Integer Speed Result

Copyright 2017-2021 Standard Performance Evaluation Corporation

## Lenovo Global Technology

ThinkSystem SN550 V2  
(3.00 GHz, Intel Xeon Gold 6354)

SPECSpeed®2017\_int\_base = 12.1

SPECSpeed®2017\_int\_peak = Not Run

CPU2017 License: 9017

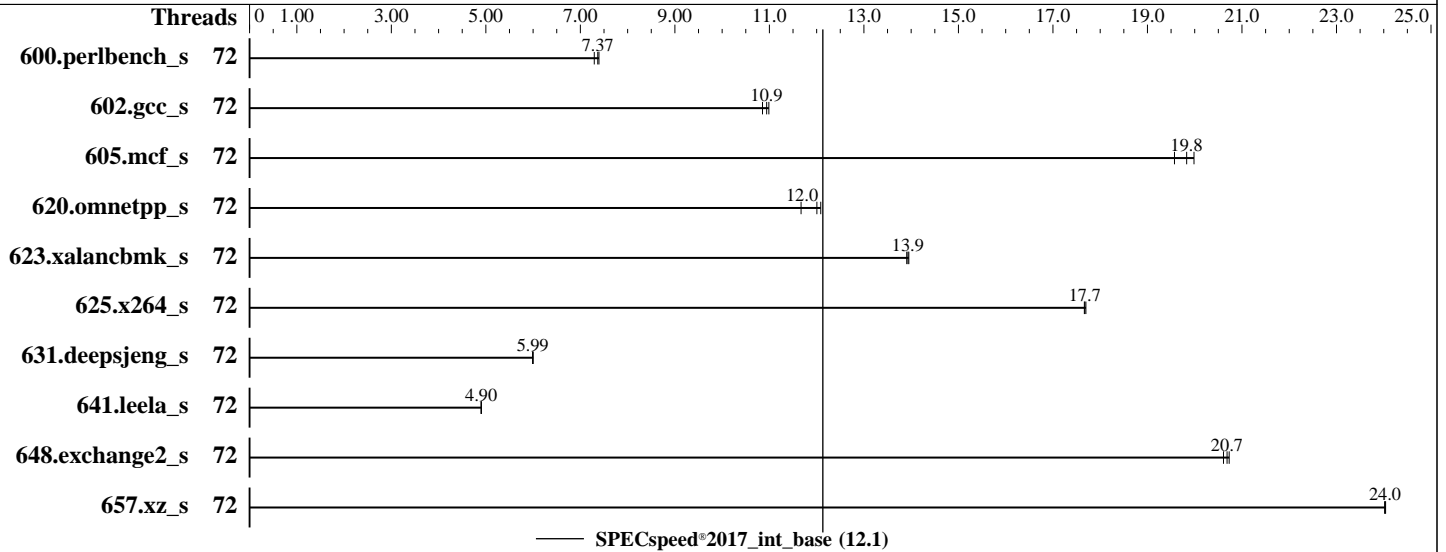
Test Sponsor: Lenovo Global Technology

Tested by: Lenovo Global Technology

Test Date: May-2021

Hardware Availability: Jul-2021

Software Availability: Feb-2021



### Hardware

CPU Name: Intel Xeon Gold 6354  
 Max MHz: 3600  
 Nominal: 3000  
 Enabled: 36 cores, 2 chips, 2 threads/core  
 Orderable: 1,2 chips  
 Cache L1: 32 KB I + 48 KB D on chip per core  
 L2: 1.25 MB I+D on chip per core  
 L3: 39 MB I+D on chip per chip  
 Other: None  
 Memory: 512 GB (16 x 32 GB 2Rx8 PC4-3200AA-R)  
 Storage: 1 x 960 GB SATA SSD  
 Other: None

### Software

OS: Red Hat Enterprise Linux 8.3 (Ootpa)  
 Kernel 4.18.0-240.el8.x86\_64  
 Compiler: C/C++: Version 2021.1 of Intel oneAPI DPC++/C++ Compiler Build 20201113 for Linux;  
 Fortran: Version 2021.1 of Intel Fortran Compiler Classic Build 20201112 for Linux;  
 C/C++: Version 2021.1 of Intel C/C++ Compiler Classic Build 20201112 for Linux  
 Parallel: Yes  
 Firmware: Lenovo BIOS Version U8E109PT1 1.01 released Apr-2021  
 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: BIOS and OS set to prefer performance at the cost of additional power usage



# SPEC CPU®2017 Integer Speed Result

Copyright 2017-2021 Standard Performance Evaluation Corporation

## Lenovo Global Technology

ThinkSystem SN550 V2  
(3.00 GHz, Intel Xeon Gold 6354)

SPECspeed®2017\_int\_base = 12.1

SPECspeed®2017\_int\_peak = Not Run

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

**Test Date:** May-2021  
**Hardware Availability:** Jul-2021  
**Software Availability:** Feb-2021

## Results Table

Benchmark	Base							Peak						
	Threads	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Threads	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
600.perlbench_s	72	240	7.39	<u>241</u>	<u>7.37</u>	243	7.29							
602.gcc_s	72	362	11.0	<u>364</u>	<u>10.9</u>	367	10.9							
605.mcf_s	72	236	20.0	241	19.6	<u>238</u>	<u>19.8</u>							
620.omnetpp_s	72	<u>136</u>	<u>12.0</u>	140	11.7	135	12.1							
623.xalancbmk_s	72	<u>102</u>	<u>13.9</u>	102	13.9	102	14.0							
625.x264_s	72	99.7	17.7	99.9	17.7	<u>99.8</u>	<u>17.7</u>							
631.deepsjeng_s	72	<u>239</u>	<u>5.99</u>	239	5.99	239	6.00							
641.leela_s	72	348	4.90	<u>348</u>	<u>4.90</u>	348	4.90							
648.exchange2_s	72	<u>142</u>	<u>20.7</u>	142	20.7	143	20.6							
657.xz_s	72	257	24.0	<u>257</u>	<u>24.0</u>	257	24.0							

SPECspeed®2017\_int\_base = 12.1

SPECspeed®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"

## Environment Variables Notes

```
Environment variables set by runcpu before the start of the run:
KMP_AFFINITY = "granularity=fine,scatter"
LD_LIBRARY_PATH =
  "/home/cpu2017-1.1.5-ic2021.1-revB/lib/intel64:/home/cpu2017-1.1.5-ic202
  1.1-revB/je5.0.1-64"
MALLOCONF = "retain:true"
OMP_STACKSIZE = "192M"
```

## General Notes

Binaries compiled on a system with 1x Intel Core i9-7980XE CPU + 64GB RAM memory using Redhat Enterprise Linux 8.0  
 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.

(Continued on next page)



# SPEC CPU®2017 Integer Speed Result

Copyright 2017-2021 Standard Performance Evaluation Corporation

## Lenovo Global Technology

SPECspeed®2017\_int\_base = 12.1

ThinkSystem SN550 V2  
(3.00 GHz, Intel Xeon Gold 6354)

SPECspeed®2017\_int\_peak = Not Run

CPU2017 License: 9017

Test Date: May-2021

Test Sponsor: Lenovo Global Technology

Hardware Availability: Jul-2021

Tested by: Lenovo Global Technology

Software Availability: Feb-2021

### General Notes (Continued)

jemalloc, a general purpose malloc implementation  
built with the RedHat Enterprise 7.5, and the system compiler gcc 4.8.5  
sources available from jemalloc.net or <https://github.com/jemalloc/jemalloc/releases>

### Platform Notes

BIOS configuration:

Choose Operating Mode set to Maximum Performance and then set it to Custom Mode

MONITOR/MWAIT set to Enabled

CPU P-state Control set to Cooperative with Legacy

C-States set to Legacy

UPI Link Disable set to Disabled 1 Link

UPI Prefetcher set to Disabled

Sysinfo program /home/cpu2017-1.1.5-ic2021.1-revB/bin/sysinfo  
Rev: r6538 of 2020-09-24 e8664e66d2d7080afeaa89d4b38e2f1c  
running on localhost.localdomain Wed May 19 09:45:12 2021

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 6354 CPU @ 3.00GHz

2 "physical id"s (chips)

72 "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 : 18

siblings : 36

physical 0: cores 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17

physical 1: cores 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17

From lscpu:

Architecture: x86\_64

CPU op-mode(s): 32-bit, 64-bit

Byte Order: Little Endian

CPU(s): 72

On-line CPU(s) list: 0-71

Thread(s) per core: 2

Core(s) per socket: 18

Socket(s): 2

NUMA node(s): 2

Vendor ID: GenuineIntel

CPU family: 6

Model: 106

(Continued on next page)



# SPEC CPU®2017 Integer Speed Result

Copyright 2017-2021 Standard Performance Evaluation Corporation

## Lenovo Global Technology

SPECspeed®2017\_int\_base = 12.1

ThinkSystem SN550 V2  
(3.00 GHz, Intel Xeon Gold 6354)

SPECspeed®2017\_int\_peak = Not Run

CPU2017 License: 9017

Test Date: May-2021

Test Sponsor: Lenovo Global Technology

Hardware Availability: Jul-2021

Tested by: Lenovo Global Technology

Software Availability: Feb-2021

### Platform Notes (Continued)

```

Model name: Intel(R) Xeon(R) Gold 6354 CPU @ 3.00GHz
Stepping: 6
CPU MHz: 1375.107
CPU max MHz: 3600.0000
CPU min MHz: 800.0000
BogoMIPS: 6000.00
Virtualization: VT-x
L1d cache: 48K
L1i cache: 32K
L2 cache: 1280K
L3 cache: 39936K
NUMA node0 CPU(s): 0-17,36-53
NUMA node1 CPU(s): 18-35,54-71
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 pdpelt rdtscp
lm constant_tsc art arch_perfmon pebs bts rep_good nopl xtopology nonstop_tsc cpuid
aperfmpperf 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 fl6c rdrand lahf_lm abm 3dnowprefetch cpuid_fault epb cat_l3 invpcid_single
intel_ppin ssbd mba ibrs ibpb stibp ibrs_enhanced tpr_shadow vnmi flexpriority ept
vpid ept_ad fsgsbase tsc_adjust bml hle avx2 smep bmi2 erms invpcid cqm rdt_a
avx512f avx512dq rdseed adx smap avx512ifma clflushopt clwb intel_pt avx512cd sha_ni
avx512bw avx512vl xsaveopt xsavec xgetbv1 xsaves cqm_llc cqm_occup_llc cqm_mbm_total
cqm_mbm_local split_lock_detect wbnoinvd dtherm ida arat pln pts hwp hwp_act_window
hwp_epp hwp_pkg_req avx512vbmi umip pku ospke avx512_vbmi2 gfni vaes vpclmulqdq
avx512_vnni avx512_bitalg tme avx512_vpopcntdq la57 rdpid md_clear pconfig flush_l1d
arch_capabilities

```

```

/proc/cpuinfo cache data
cache size : 39936 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 36 37 38 39 40 41 42 43 44 45
46 47 48 49 50 51 52 53
node 0 size: 244377 MB
node 0 free: 256963 MB
node 1 cpus: 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 54 55 56 57 58 59 60
61 62 63 64 65 66 67 68 69 70 71
node 1 size: 245241 MB
node 1 free: 257328 MB
node distances:
node 0 1
0: 10 20
1: 20 10

```

(Continued on next page)



# SPEC CPU®2017 Integer Speed Result

Copyright 2017-2021 Standard Performance Evaluation Corporation

## Lenovo Global Technology

SPECspeed®2017\_int\_base = 12.1

ThinkSystem SN550 V2  
(3.00 GHz, Intel Xeon Gold 6354)

SPECspeed®2017\_int\_peak = Not Run

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

**Test Date:** May-2021  
**Hardware Availability:** Jul-2021  
**Software Availability:** Feb-2021

### Platform Notes (Continued)

```

From /proc/meminfo
  MemTotal:      527873212 kB
  HugePages_Total:      0
  Hugepagesize:    2048 kB

/sbin/tuned-adm active
  Current active profile: throughput-performance

/sys/devices/system/cpu/cpu*/cpufreq/scaling_governor has
performance

From /etc/*release* /etc/*version*
os-release:
  NAME="Red Hat Enterprise Linux"
  VERSION="8.3 (Ootpa)"
  ID="rhel"
  ID_LIKE="fedora"
  VERSION_ID="8.3"
  PLATFORM_ID="platform:el8"
  PRETTY_NAME="Red Hat Enterprise Linux 8.3 (Ootpa)"
  ANSI_COLOR="0;31"
redhat-release: Red Hat Enterprise Linux release 8.3 (Ootpa)
system-release: Red Hat Enterprise Linux release 8.3 (Ootpa)
system-release-cpe: cpe:/o:redhat:enterprise_linux:8.3:ga

uname -a:
Linux localhost.localdomain 4.18.0-240.el8.x86_64 #1 SMP Wed Sep 23 05:13:10 EDT 2020
x86_64 x86_64 x86_64 GNU/Linux

Kernel self-reported vulnerability status:

CVE-2018-12207 (iTLB Multihit):      Not affected
CVE-2018-3620 (L1 Terminal Fault):   Not affected
Microarchitectural Data Sampling:   Not affected
CVE-2017-5754 (Meltdown):           Not affected
CVE-2018-3639 (Speculative Store Bypass): Mitigation: Speculative Store
Bypass disabled via prctl and
seccomp
CVE-2017-5753 (Spectre variant 1):   Mitigation: usercopy/swapgs
barriers and __user pointer
sanitization
CVE-2017-5715 (Spectre variant 2):   Mitigation: Enhanced IBRS, IBPB:
conditional, RSB filling
CVE-2020-0543 (Special Register Buffer Data Sampling): Not affected
CVE-2019-11135 (TSX Asynchronous Abort): Not affected

run-level 3 May 19 09:41

```

(Continued on next page)



# SPEC CPU®2017 Integer Speed Result

Copyright 2017-2021 Standard Performance Evaluation Corporation

## Lenovo Global Technology

SPECspeed®2017\_int\_base = 12.1

ThinkSystem SN550 V2  
(3.00 GHz, Intel Xeon Gold 6354)

SPECspeed®2017\_int\_peak = Not Run

CPU2017 License: 9017

Test Date: May-2021

Test Sponsor: Lenovo Global Technology

Hardware Availability: Jul-2021

Tested by: Lenovo Global Technology

Software Availability: Feb-2021

## Platform Notes (Continued)

SPEC is set to: /home/cpu2017-1.1.5-ic2021.1-revB

Filesystem	Type	Size	Used	Avail	Use%	Mounted on
/dev/sda4	xfs	818G	15G	803G	2%	/home

From /sys/devices/virtual/dmi/id

```
Vendor:          Lenovo
Product:        ThinkSystem SN550 V2
Product Family: ThinkSystem
Serial:         1234567890
```

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:

16x Samsung M393A4G43AB3-CWE 32 GB 2 rank 3200

BIOS:

```
BIOS Vendor:      Lenovo
BIOS Version:    U8E109PT1-1.01
BIOS Date:       04/28/2021
BIOS Revision:   1.1
Firmware Revision: 1.40
```

(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) oneAPI DPC++/C++ Compiler for applications running on Intel(R) 64,  
Version 2021.1 Build 20201113  
Copyright (C) 1985-2020 Intel Corporation. All rights reserved.  
-----
```

```
=====  
C++   | 620.omnetpp_s(base) 623.xalancbmk_s(base) 631.deepsjeng_s(base)  
     | 641.leela_s(base)  
-----
```

```
Intel(R) oneAPI DPC++/C++ Compiler for applications running on Intel(R) 64,  
Version 2021.1 Build 20201113  
Copyright (C) 1985-2020 Intel Corporation. All rights reserved.  
-----
```

(Continued on next page)



# SPEC CPU®2017 Integer Speed Result

Copyright 2017-2021 Standard Performance Evaluation Corporation

**Lenovo Global Technology**

SPECspeed®2017\_int\_base = 12.1

ThinkSystem SN550 V2  
(3.00 GHz, Intel Xeon Gold 6354)

SPECspeed®2017\_int\_peak = Not Run

CPU2017 License: 9017

Test Date: May-2021

Test Sponsor: Lenovo Global Technology

Hardware Availability: Jul-2021

Tested by: Lenovo Global Technology

Software Availability: Feb-2021

## Compiler Version Notes (Continued)

=====  
Fortran | 648.exchange2\_s(base)  
=====

Intel(R) Fortran Intel(R) 64 Compiler Classic for applications running on  
Intel(R) 64, Version 2021.1 Build 20201112\_000000  
Copyright (C) 1985-2020 Intel Corporation. All rights reserved.  
=====

## Base Compiler Invocation

C benchmarks:

icx

C++ benchmarks:

icpx

Fortran benchmarks:

ifort

## 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:

-DSPEC\_OPENMP -std=c11 -m64 -fiopenmp -Wl,-z,muldefs -xCORE-AVX2  
-O3 -ffast-math -flto -mfpmath=sse -funroll-loops  
-qopt-mem-layout-trans=4 -mbranches-within-32B-boundaries  
-L/usr/local/jemalloc64-5.0.1/lib -ljemalloc

(Continued on next page)



# SPEC CPU®2017 Integer Speed Result

Copyright 2017-2021 Standard Performance Evaluation Corporation

**Lenovo Global Technology**

SPECspeed®2017\_int\_base = 12.1

ThinkSystem SN550 V2  
(3.00 GHz, Intel Xeon Gold 6354)

SPECspeed®2017\_int\_peak = Not Run

**CPU2017 License:** 9017

**Test Date:** May-2021

**Test Sponsor:** Lenovo Global Technology

**Hardware Availability:** Jul-2021

**Tested by:** Lenovo Global Technology

**Software Availability:** Feb-2021

## Base Optimization Flags (Continued)

C++ benchmarks:

```
-DSPEC_OPENMP -m64 -Wl,-z,muldefs -xCORE-AVX2 -O3 -ffast-math -flto  
-mfpmath=sse -funroll-loops -qopt-mem-layout-trans=4  
-mbranches-within-32B-boundaries  
-L/opt/intel/oneapi/compiler/2021.1.1/linux/compiler/lib/intel64_lin/  
-lqkmallocc
```

Fortran benchmarks:

```
-m64 -xCORE-AVX2 -O3 -ipo -no-prec-div -qopt-mem-layout-trans=4  
-nostandard-realloc-lhs -align array32byte -auto  
-mbranches-within-32B-boundaries
```

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-ICElake-D.html>  
[http://www.spec.org/cpu2017/flags/Intel-ic2021-official-linux64\\_revA.html](http://www.spec.org/cpu2017/flags/Intel-ic2021-official-linux64_revA.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-ICElake-D.xml>  
[http://www.spec.org/cpu2017/flags/Intel-ic2021-official-linux64\\_revA.xml](http://www.spec.org/cpu2017/flags/Intel-ic2021-official-linux64_revA.xml)

SPEC CPU and SPECspeed are registered trademarks 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](mailto:info@spec.org).

Tested with SPEC CPU®2017 v1.1.5 on 2021-05-18 21:45:12-0400.  
Report generated on 2021-06-08 20:02:12 by CPU2017 PDF formatter v6442.  
Originally published on 2021-06-08.