



# SPEC CPU®2017 Integer Speed Result

Copyright 2017-2021 Standard Performance Evaluation Corporation

## Lenovo Global Technology

SPECspeed®2017\_int\_base = 10.7

ThinkSystem SR650 V2  
(2.00 GHz, Intel Xeon Gold 6330)

SPECspeed®2017\_int\_peak = Not Run

CPU2017 License: 9017

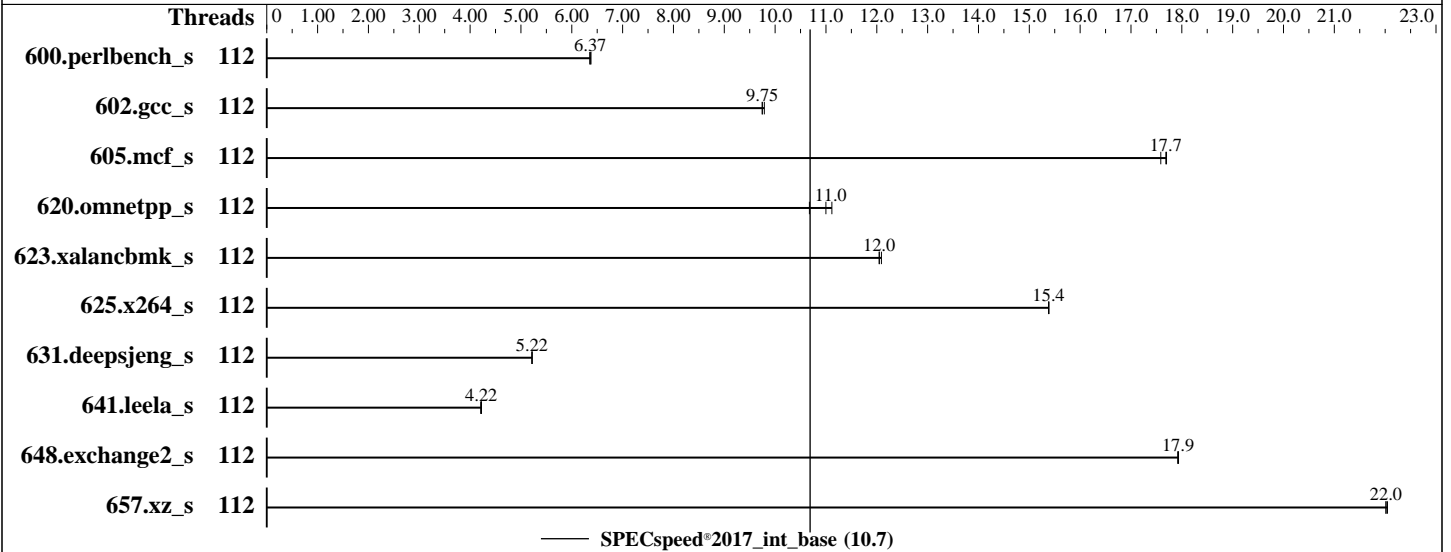
Test Date: Jun-2021

Test Sponsor: Lenovo Global Technology

Hardware Availability: Jul-2021

Tested by: Lenovo Global Technology

Software Availability: Feb-2021



### Hardware

CPU Name: Intel Xeon Gold 6330  
 Max MHz: 3100  
 Nominal: 2000  
 Enabled: 56 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: 42 MB I+D on chip per chip  
 Other: None  
 Memory: 1 TB (32 x 32 GB 2Rx8 PC4-3200AA-R, running at 2933)  
 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 AFE109PT1 1.00 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 SR650 V2  
(2.00 GHz, Intel Xeon Gold 6330)

SPECSpeed®2017\_int\_base = 10.7

SPECSpeed®2017\_int\_peak = Not Run

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

**Test Date:** Jun-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	112	278	6.38	<u>279</u>	<u>6.37</u>	279	6.35									
602.gcc_s	112	409	9.75	<u>409</u>	<u>9.75</u>	407	9.79									
605.mcf_s	112	<u>267</u>	<u>17.7</u>	268	17.6	267	17.7									
620.omnetpp_s	112	147	11.1	<u>148</u>	<u>11.0</u>	153	10.7									
623.xalancbmk_s	112	118	12.0	117	12.1	<u>118</u>	<u>12.0</u>									
625.x264_s	112	115	15.4	<u>115</u>	<u>15.4</u>	115	15.4									
631.deepsjeng_s	112	275	5.22	<u>275</u>	<u>5.22</u>	275	5.22									
641.leela_s	112	<u>404</u>	<u>4.22</u>	404	4.22	405	4.21									
648.exchange2_s	112	<u>164</u>	<u>17.9</u>	164	17.9	164	17.9									
657.xz_s	112	281	22.0	280	22.0	<u>281</u>	<u>22.0</u>									

SPECSpeed®2017\_int\_base = 10.7

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-ic2021.1-revB/je5.0.1-64"  
MALLOC\_CONF = "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 = 10.7

ThinkSystem SR650 V2  
(2.00 GHz, Intel Xeon Gold 6330)

SPECspeed®2017\_int\_peak = Not Run

**CPU2017 License:** 9017

**Test Date:** Jun-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  
C-States set to Legacy

Sysinfo program /home/cpu2017-1.1.5-ic2021.1-revB/bin/sysinfo  
Rev: r6538 of 2020-09-24 e8664e66d2d7080afeaa89d4b38e2f1c  
running on localhost.localdomain Tue Jun 1 18:40:09 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 6330 CPU @ 2.00GHz
 2 "physical id"s (chips)
 112 "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    : 28
  siblings    : 56
 physical 0: cores 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24
 25 26 27
 physical 1: cores 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24
 25 26 27
```

From lscpu:

```
Architecture:    x86_64
CPU op-mode(s):  32-bit, 64-bit
Byte Order:      Little Endian
CPU(s):          112
On-line CPU(s) list: 0-111
Thread(s) per core: 2
Core(s) per socket: 28
Socket(s):       2
NUMA node(s):   2
Vendor ID:       GenuineIntel
CPU family:      6
Model:          106
Model name:      Intel(R) Xeon(R) Gold 6330 CPU @ 2.00GHz
Stepping:        6
```

(Continued on next page)



# SPEC CPU®2017 Integer Speed Result

Copyright 2017-2021 Standard Performance Evaluation Corporation

## Lenovo Global Technology

SPECspeed®2017\_int\_base = 10.7

ThinkSystem SR650 V2  
(2.00 GHz, Intel Xeon Gold 6330)

SPECspeed®2017\_int\_peak = Not Run

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

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

### Platform Notes (Continued)

```

CPU MHz:                2602.850
BogoMIPS:               4000.00
Virtualization:        VT-x
L1d cache:             48K
L1i cache:             32K
L2 cache:              1280K
L3 cache:              43008K
NUMA node0 CPU(s):    0-27,56-83
NUMA node1 CPU(s):    28-55,84-111
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 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 f16c 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 bmi1 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 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 : 43008 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 24 25 26 27
56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83
node 0 size: 482725 MB
node 0 free: 514900 MB
node 1 cpus: 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52
53 54 55 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100 101 102 103 104 105 106
107 108 109 110 111
node 1 size: 484551 MB
node 1 free: 515261 MB
node distances:
node  0  1
  0:  10  20
  1:  20  10

```

```

From /proc/meminfo
MemTotal:      1056478560 kB
HugePages_Total:      0
Hugepagesize:    2048 kB

```

(Continued on next page)



# SPEC CPU®2017 Integer Speed Result

Copyright 2017-2021 Standard Performance Evaluation Corporation

## Lenovo Global Technology

SPECspeed®2017\_int\_base = 10.7

ThinkSystem SR650 V2  
(2.00 GHz, Intel Xeon Gold 6330)

SPECspeed®2017\_int\_peak = Not Run

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

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

### Platform Notes (Continued)

```

/sbin/tuned-adm active
  Current active profile: throughput-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 Jun 1 18:36

SPEC is set to: /home/cpu2017-1.1.5-ic2021.1-revB
  Filesystem      Type  Size  Used Avail Use% Mounted on
  /dev/sdb4       xfs   819G  234G  585G  29% /home

From /sys/devices/virtual/dmi/id
Vendor:           Lenovo

```

(Continued on next page)



# SPEC CPU®2017 Integer Speed Result

Copyright 2017-2021 Standard Performance Evaluation Corporation

## Lenovo Global Technology

SPECspeed®2017\_int\_base = 10.7

ThinkSystem SR650 V2  
(2.00 GHz, Intel Xeon Gold 6330)

SPECspeed®2017\_int\_peak = Not Run

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

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

### Platform Notes (Continued)

Product: ThinkSystem SR650 V2 MB  
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:  
32x Samsung M393A4G43AB3-CWE 32 GB 2 rank 3200, configured at 2933

BIOS:  
BIOS Vendor: Lenovo  
BIOS Version: AFE109PT1-1.00  
BIOS Date: 04/28/2021  
BIOS Revision: 1.0  
Firmware Revision: 1.0

(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.xalanbmk\_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.  
-----

=====  
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.

(Continued on next page)



# SPEC CPU®2017 Integer Speed Result

Copyright 2017-2021 Standard Performance Evaluation Corporation

**Lenovo Global Technology**

SPECspeed®2017\_int\_base = 10.7

ThinkSystem SR650 V2  
(2.00 GHz, Intel Xeon Gold 6330)

SPECspeed®2017\_int\_peak = Not Run

CPU2017 License: 9017

Test Date: Jun-2021

Test Sponsor: Lenovo Global Technology

Hardware Availability: Jul-2021

Tested by: Lenovo Global Technology

Software Availability: Feb-2021

## Compiler Version Notes (Continued)

---

## 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
```

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/
-lqkmallo
```

(Continued on next page)



# SPEC CPU®2017 Integer Speed Result

Copyright 2017-2021 Standard Performance Evaluation Corporation

**Lenovo Global Technology**

SPECspeed®2017\_int\_base = 10.7

ThinkSystem SR650 V2  
(2.00 GHz, Intel Xeon Gold 6330)

SPECspeed®2017\_int\_peak = Not Run

**CPU2017 License:** 9017

**Test Date:** Jun-2021

**Test Sponsor:** Lenovo Global Technology

**Hardware Availability:** Jul-2021

**Tested by:** Lenovo Global Technology

**Software Availability:** Feb-2021

## Base Optimization Flags (Continued)

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 2021-06-01 06:40:09-0400.  
Report generated on 2021-06-22 17:05:35 by CPU2017 PDF formatter v6442.  
Originally published on 2021-06-22.