



# SPEC® CPU2017 Integer Speed Result

Copyright 2017-2019 Standard Performance Evaluation Corporation

## Lenovo Global Technology

SPECspeed2017\_int\_base = 8.38

ThinkSystem SR630  
(2.10 GHz, Intel Xeon Silver 4216)

SPECspeed2017\_int\_peak = Not Run

CPU2017 License: 9017

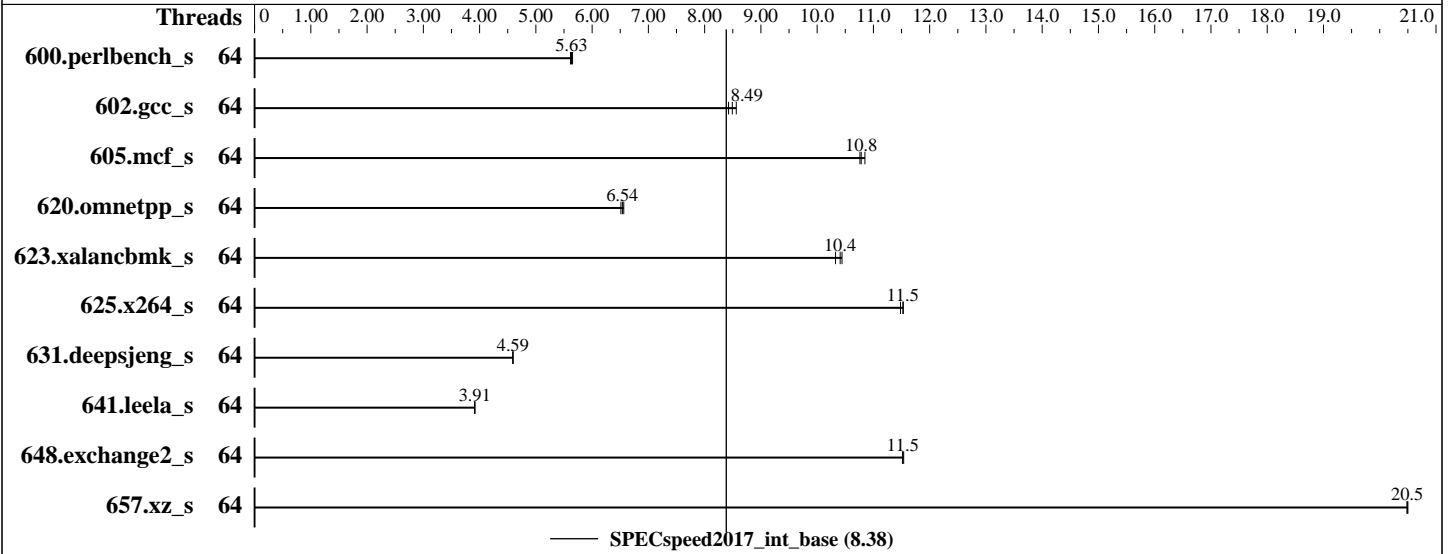
Test Date: Apr-2019

Test Sponsor: Lenovo Global Technology

Hardware Availability: Apr-2019

Tested by: Lenovo Global Technology

Software Availability: Dec-2018



### Hardware

CPU Name: Intel Xeon Silver 4216  
 Max MHz.: 3200  
 Nominal: 2100  
 Enabled: 32 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: 22 MB I+D on chip per chip  
 Other: None  
 Memory: 384 GB (24 x 16 GB 2Rx8 PC4-2933Y-R, running at 2400)  
 Storage: 1 x 800 GB SATA SSD  
 Other: None

### Software

OS: SUSE Linux Enterprise Server 12 SP4 (x86\_64)  
 Kernel 4.12.14-94.41-default  
 Compiler: C/C++: Version 19.0.1.144 of Intel C/C++  
 Compiler Build 20181018 for Linux;  
 Fortran: Version 19.0.1.144 of Intel Fortran  
 Compiler Build 20181018 for Linux  
 Parallel: Yes  
 Firmware: Lenovo BIOS Version IVE135P 2.10 released Feb-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



# SPEC CPU2017 Integer Speed Result

Copyright 2017-2019 Standard Performance Evaluation Corporation

## Lenovo Global Technology

ThinkSystem SR630  
(2.10 GHz, Intel Xeon Silver 4216)

SPECspeed2017\_int\_base = 8.38

SPECspeed2017\_int\_peak = Not Run

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

Test Date: Apr-2019  
Hardware Availability: Apr-2019  
Software Availability: Dec-2018

## Results Table

Benchmark	Base							Peak						
	Threads	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Threads	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
600.perlbench_s	64	314	5.65	316	5.62	<b>315</b>	<b>5.63</b>							
602.gcc_s	64	<b>469</b>	<b>8.49</b>	473	8.42	465	8.56							
605.mcf_s	64	435	10.8	439	10.8	<b>438</b>	<b>10.8</b>							
620.omnetpp_s	64	250	6.51	249	6.56	<b>249</b>	<b>6.54</b>							
623.xalancbmk_s	64	136	10.4	137	10.3	<b>136</b>	<b>10.4</b>							
625.x264_s	64	153	11.5	<b>153</b>	<b>11.5</b>	154	11.5							
631.deepsjeng_s	64	312	4.59	312	4.59	<b>312</b>	<b>4.59</b>							
641.leela_s	64	<b>436</b>	<b>3.91</b>	436	3.91	436	3.91							
648.exchange2_s	64	255	11.5	<b>255</b>	<b>11.5</b>	255	11.5							
657.xz_s	64	302	20.5	302	20.5	<b>302</b>	<b>20.5</b>							

SPECspeed2017\_int\_base = 8.38

SPECspeed2017\_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\_AFFINITY = "granularity=fine,scatter"  
LD\_LIBRARY\_PATH = "/home/cpu2017-1.0.5-ic19.0u1/lib/intel64"  
LD\_LIBRARY\_PATH = "\$LD\_LIBRARY\_PATH:/home/cpu2017-1.0.5-ic19.0u1/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
```

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.

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)



# SPEC CPU2017 Integer Speed Result

Copyright 2017-2019 Standard Performance Evaluation Corporation

## Lenovo Global Technology

ThinkSystem SR630  
(2.10 GHz, Intel Xeon Silver 4216)

SPECspeed2017\_int\_base = 8.38

SPECspeed2017\_int\_peak = Not Run

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

**Test Date:** Apr-2019  
**Hardware Availability:** Apr-2019  
**Software Availability:** Dec-2018

### General Notes (Continued)

sources available from jemalloc.net or <https://github.com/jemalloc/jemalloc/releases>

### 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-ic19.0u1/bin/sysinfo

Rev: r5974 of 2018-05-19 9bcde8f2999c33d61f64985e45859ea9

running on linux-ptrrp Mon Apr 8 00:55:29 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) Silver 4216 CPU @ 2.10GHz

2 "physical id"s (chips)

64 "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 : 16

siblings : 32

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

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

From lscpu:

Architecture: x86\_64

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

Byte Order: Little Endian

CPU(s): 64

On-line CPU(s) list: 0-63

Thread(s) per core: 2

Core(s) per socket: 16

Socket(s): 2

NUMA node(s): 2

Vendor ID: GenuineIntel

CPU family: 6

Model: 85

Model name: Intel(R) Xeon(R) Silver 4216 CPU @ 2.10GHz

Stepping: 6

CPU MHz: 2100.000

CPU max MHz: 3200.0000

CPU min MHz: 800.0000

BogoMIPS: 4200.00

(Continued on next page)



# SPEC CPU2017 Integer Speed Result

Copyright 2017-2019 Standard Performance Evaluation Corporation

## Lenovo Global Technology

ThinkSystem SR630  
(2.10 GHz, Intel Xeon Silver 4216)

SPECspeed2017\_int\_base = 8.38

SPECspeed2017\_int\_peak = Not Run

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

**Test Date:** Apr-2019  
**Hardware Availability:** Apr-2019  
**Software Availability:** Dec-2018

### Platform Notes (Continued)

```

Virtualization:      VT-x
L1d cache:          32K
L1i cache:          32K
L2 cache:           1024K
L3 cache:           22528K
NUMA node0 CPU(s):  0-15,32-47
NUMA node1 CPU(s):  16-31,48-63
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 fl6c rdrand lahf_lm abm 3dnowprefetch cpuid_fault epb cat_l3 cdp_l3
invpcid_single ssbd mba ibrs ibpb stibp tpr_shadow vnmi flexpriority 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_pt avx512cd avx512bw avx512vl
xsaveopt xsavec xgetbv1 xsaves cqm_llc cqm_occup_llc cqm_mbm_total cqm_mbm_local
dtherm ida arat pln pts pku ospke avx512_vnni flush_lld arch_capabilities

```

```

/proc/cpuinfo cache data
cache size : 22528 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 32 33 34 35 36 37 38 39 40 41 42 43
44 45 46 47
node 0 size: 193092 MB
node 0 free: 192640 MB
node 1 cpus: 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 48 49 50 51 52 53 54 55 56
57 58 59 60 61 62 63
node 1 size: 193506 MB
node 1 free: 192765 MB
node distances:
node  0  1
0:   10  21
1:   21  10

```

```

From /proc/meminfo
MemTotal:      395877508 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)



# SPEC CPU2017 Integer Speed Result

Copyright 2017-2019 Standard Performance Evaluation Corporation

## Lenovo Global Technology

ThinkSystem SR630  
(2.10 GHz, Intel Xeon Silver 4216)

SPECspeed2017\_int\_base = 8.38

SPECspeed2017\_int\_peak = Not Run

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

**Test Date:** Apr-2019  
**Hardware Availability:** Apr-2019  
**Software Availability:** Dec-2018

### 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:
Linux linux-ptrp 4.12.14-94.41-default #1 SMP Wed Oct 31 12:25:04 UTC 2018 (3090901)
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 Apr 8 00:51

SPEC is set to: /home/cpu2017-1.0.5-ic19.0u1
Filesystem      Type      Size  Used Avail Use% Mounted on
/dev/sda2       btrfs    744G   35G  710G   5% /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 Lenovo  -[IVE135P-2.10]- 02/13/2019
Memory:
24x Samsung M393A2K43CB2-CVF 16 GB 2 rank 2933, configured at 2400

(End of data from sysinfo program)

```

### Compiler Version Notes

```

=====
CC 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,

```

(Continued on next page)



# SPEC CPU2017 Integer Speed Result

Copyright 2017-2019 Standard Performance Evaluation Corporation

## Lenovo Global Technology

ThinkSystem SR630  
(2.10 GHz, Intel Xeon Silver 4216)

SPECspeed2017\_int\_base = 8.38

SPECspeed2017\_int\_peak = Not Run

CPU2017 License: 9017

Test Sponsor: Lenovo Global Technology

Tested by: Lenovo Global Technology

Test Date: Apr-2019

Hardware Availability: Apr-2019

Software Availability: Dec-2018

### Compiler Version Notes (Continued)

Version 19.0.1.144 Build 20181018  
Copyright (C) 1985-2018 Intel Corporation. All rights reserved.

=====  
CXXC 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 19.0.1.144 Build 20181018  
Copyright (C) 1985-2018 Intel Corporation. All rights reserved.

=====  
FC 648.exchange2\_s(base)

-----  
Intel(R) Fortran Intel(R) 64 Compiler for applications running on Intel(R)  
64, Version 19.0.1.144 Build 20181018  
Copyright (C) 1985-2018 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.perlbenc\_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

(Continued on next page)



# SPEC CPU2017 Integer Speed Result

Copyright 2017-2019 Standard Performance Evaluation Corporation

**Lenovo Global Technology**

ThinkSystem SR630  
(2.10 GHz, Intel Xeon Silver 4216)

SPECspeed2017\_int\_base = 8.38

SPECspeed2017\_int\_peak = Not Run

CPU2017 License: 9017

Test Sponsor: Lenovo Global Technology

Tested by: Lenovo Global Technology

Test Date: Apr-2019

Hardware Availability: Apr-2019

Software Availability: Dec-2018

## Base Portability Flags (Continued)

657.xz\_s: -DSPEC\_LP64

## Base Optimization Flags

C benchmarks:

-Wl,-z,muldefs -xCORE-AVX512 -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-AVX512 -ipo -O3 -no-prec-div  
-qopt-mem-layout-trans=4  
-L/usr/local/IntelCompiler19/compilers\_and\_libraries\_2019.1.144/linux/compiler/lib/intel64  
-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

<http://www.spec.org/cpu2017/flags/Intel-ic18.0-official-linux64.2019-04-02.html>

<http://www.spec.org/cpu2017/flags/Lenovo-Platform-SPECcpu2017-Flags-V1.2-CLX-A.html>

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

<http://www.spec.org/cpu2017/flags/Intel-ic18.0-official-linux64.2019-04-02.xml>

<http://www.spec.org/cpu2017/flags/Lenovo-Platform-SPECcpu2017-Flags-V1.2-CLX-A.xml>

SPEC is a registered trademark 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 CPU2017 v1.0.5 on 2019-04-07 12:55:28-0400.

Report generated on 2019-04-30 17:42:23 by CPU2017 PDF formatter v6067.

Originally published on 2019-04-30.