Lenovo Global Technology
ThinkSystem SR630
(2.30 GHz, Intel Xeon Gold 5218B)

SPECspeed2017_fp_base = 118
SPECspeed2017_fp_peak = Not Run

Hardware
CPU Name: Intel Xeon Gold 5218B
Max MHz.: 3900
Nominal: 2300
Enabled: 32 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: 22 MB I+D on chip per chip
Other: None
Memory: 384 GB (24 x 16 GB 2Rx8 PC4-2933Y-R, running at 2666)
Storage: 1 x 800 GB SATA SSD
Other: None

Software
OS: Red Hat Enterprise Linux Server release 7.6 (Maipo)
Compiler: C/C++: Version 19.0.0.117 of Intel C/C++
Compiler for Linux;
Compiler for Linux
Parallel: Yes
Firmware: Lenovo BIOS Version IVE135P 2.10 released Feb-2019
File System: xfs
System State: Run level 3 (multi-user)
Base Pointers: 64-bit
Peak Pointers: Not Applicable
Other: None
# SPEC CPU2017 Floating Point Speed Result

**Lenovo Global Technology**  
ThinkSystem SR630  
(2.30 GHz, Intel Xeon Gold 5218B)

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

| Test Date: | May-2019 |
| Hardware Availability: | Apr-2019 |
| Software Availability: | Oct-2018 |

## Results Table

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**SPECspeed2017_fp_base = 118**  
**SPECspeed2017_fp_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,compact"
  
  LD_LIBRARY_PATH = "/home/cpu2017-1.0.5-ic19/lib/intel64"
  
  OMP_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.
## Lenovo Global Technology

**ThinkSystem SR630**  
(2.30 GHz, Intel Xeon Gold 5218B)

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### Platform Notes

**BIOS configuration:**
- Choose Operating Mode set to Maximum Performance
- Choose Operating Mode set to Custom Mode
- C-states set to Legacy
- Hyper-Threading set to Disable
- Adjacent Cache Prefetch set to Disable
- Staie AtoS set to Enable

Sysinfo program `/home/cpu2017-1.0.5-ic19/bin/sysinfo`  
Rev: r5974 of 2018-05-19 9bcde8f2999c33d61f649b8e45859ea9  
running on localhost.localdomain Fri May 24 10:36:14 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 5218 CPU @ 2.30GHz  
  - 2 "physical id"s (chips)  
  - 32 "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: 16  
  - 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): 32  
- On-line CPU(s) list: 0-31  
- Thread(s) per core: 1  
- 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) Gold 5218 CPU @ 2.30GHz  
- Stepping: 6  
- CPU MHz: 2300.000  
- BogoMIPS: 4600.00  
- Virtualization: VT-x  
- L1d cache: 32K  
- L1i cache: 32K  
- L2 cache: 1024K

(Continued on next page)
Lenovo Global Technology

ThinkSystem SR630
(2.30 GHz, Intel Xeon Gold 5218B)

SPEC CPU2017 Floating Point Speed Result

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SPECspeed2017_fp_base = 118
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CPU2017 License: 9017
Test Sponsor: Lenovo Global Technology
Test Date: May-2019
Tested by: Lenovo Global Technology
Hardware Availability: Apr-2019
Software Availability: Oct-2018

Platform Notes (Continued)

L3 cache: 22528K
NUMA node0 CPU(s): 0-15
NUMA node1 CPU(s): 16-31

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
aperfpmperf eagerfpu pni pclmulqdq dtes64 monitor ds_cpl vmx smx est tm2 ssse3 sdbg
fma cx16 xtrunc pdcm pclid dca sse4_1 sse4_2 x2apic movbe popcnt tsc_deadline_timer aes
xsave avx f16c rdrand lahf_lm abm 3dnowprefetch epb cat_13 cdp_13 intel_pt ssbd mba
ibr ibbp stibp ibrs_enhanced tpr_shadow vmmi flexpriority ept vpid fsqsbse
tsc_adjust bmi1 hle avx2 smep bmi2 erna invpcid rtm cqm mpx rdt_a avx512f avx512dq
rdseed adx smap clflushopt clwb avx512cd avx512bw avx512vl xsaveopt xsavec xgetbv1
cqm_llc cqm_occup_llc cqm_mbm_total cqm_mbm_local dtherm ida arat pln pts pku ospke
avx512_vnni spec_ctrl intel_stibp flush_l1d arch_capabilities

From /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
  node 0 size: 196281 MB
  node 0 free: 190508 MB
  node 1 cpus: 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31
  node 1 size: 196608 MB
  node 1 free: 191978 MB
  node distances:
    node 0 1
    0: 10 21
    1: 21 10

From /proc/meminfo
  MemTotal: 395879464 kB
  HugePages_Total: 0
  Hugepagesize: 2048 kB

From /etc/*release*/etc/*version*
  os-release:
    NAME="Red Hat Enterprise Linux Server"
    VERSION="7.6 (Maipo)"
    ID="rhel"
    ID_LIKE="fedora"
    VARIANT="Server"
    VARIANT_ID="server"
    VERSION_ID="7.6"
    PRETTY_NAME="Red Hat Enterprise Linux Server 7.6 (Maipo)"

(Continued on next page)
# SPEC CPU2017 Floating Point Speed Result

## Lenovo Global Technology

ThinkSystem SR630  
(2.30 GHz, Intel Xeon Gold 5218B)

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| Test Date: | May-2019 |
| Hardware Availability: | Apr-2019 |
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**Platform Notes (Continued)**

```plaintext
redhat-release: Red Hat Enterprise Linux Server release 7.6 (Maipo)  
system-release: Red Hat Enterprise Linux Server release 7.6 (Maipo)  
```

```plaintext
uname -a:  
    Linux localhost.localdomain 3.10.0-957.el7.x86_64 #1 SMP Thu Oct 4 20:48:51 UTC 2018  
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: Load fences, __user pointer sanitization
- CVE-2017-5715 (Spectre variant 2): Mitigation: Enhanced IBRS

```plaintext
run-level 3 May 24 09:29
```

SPEC is set to: /home/cpu2017-1.0.5-ic19

```plaintext
Filesystem Type Size Used Avail Use% Mounted on  
/dev/sdb2 xfs 689G 42G 647G 7% /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:

```plaintext
24x Samsung M393A2K43CB2-CVF 16 GB 2 rank 2933, configured at 2666
```

(End of data from sysinfo program)

## Compiler Version Notes

```
CC  619.lbm_s(base) 638.imagick_s(base) 644.nab_s(base)
```

```
Intel(R) C Intel(R) 64 Compiler for applications running on Intel(R) 64,  
Version 19.0.0.117 Build 20180804  
Copyright (C) 1985-2018 Intel Corporation. All rights reserved.
```

```
FC  607.cactuBSSN_s(base)
```

```
Intel(R) C++ Intel(R) 64 Compiler for applications running on Intel(R) 64,  
Version 19.0.0.117 Build 20180804  
Copyright (C) 1985-2018 Intel Corporation. All rights reserved.
```

(Continued on next page)
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Compiler Version Notes (Continued)

Intel(R) C Intel(R) 64 Compiler for applications running on Intel(R) 64,
Version 19.0.0.117 Build 20180804
Copyright (C) 1985-2018 Intel Corporation. All rights reserved.

 intel(R) Fortran Intel(R) 64 Compiler for applications running on Intel(R)
64, Version 19.0.0.117 Build 20180804
Copyright (C) 1985-2018 Intel Corporation. All rights reserved.

-----------------------------------------------
FC  603.bwaves_s(base) 649.fotonik3d_s(base) 654.roms_s(base)
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Intel(R) Fortran Intel(R) 64 Compiler for applications running on Intel(R)
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-----------------------------------------------
Intel(R) Fortran Intel(R) 64 Compiler for applications running on Intel(R)
64, Version 19.0.0.117 Build 20180804
Copyright (C) 1985-2018 Intel Corporation. All rights reserved.

Base Compiler Invocation

C benchmarks:
icc -m64 -std=c11

Fortran benchmarks:
ifort -m64

Benchmarks using both Fortran and C:
ifort -m64 icc -m64 -std=c11

Benchmarks using Fortran, C, and C++:
icpc -m64 icc -m64 -std=c11 ifort -m64
# SPEC CPU2017 Floating Point Speed Result

## Lenovo Global Technology

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---

## Base Portability Flags

- 603.bwaves_s: -DSPEC_LP64
- 607.cactuBSSN_s: -DSPEC_LP64
- 619.hm_s: -DSPEC_LP64
- 621.wrf_s: -DSPEC_LP64  -DSPEC_CASE_FLAG  -convert big_endian
- 627.cam4_s: -DSPEC_LP64  -DSPEC_CASE_FLAG
- 628.pop2_s: -DSPEC_LP64  -DSPEC_CASE_FLAG  -convert big_endian
  -assume byterecl
- 638.imagick_s: -DSPEC_LP64
- 644.nab_s: -DSPEC_LP64
- 649.fotonik3d_s: -DSPEC_LP64
- 654.roms_s: -DSPEC_LP64

## Base Optimization Flags

**C benchmarks:**
- -xCORE-AVX512  -ipo -O3  -no-prec-div  -qopt-prefetch
- -ffinite-math-only  -qopt-mem-layout-trans=3  -qopenmp  -DSPEC_OPENMP

**Fortran benchmarks:**
- -DSPEC_OPENMP  -xCORE-AVX512  -ipo -O3  -no-prec-div  -qopt-prefetch
- -ffinite-math-only  -qopt-mem-layout-trans=3  -qopenmp
- -nostandard-realloc-lhs  -align array32byte

**Benchmarks using both Fortran and C:**
- -xCORE-AVX512  -ipo -O3  -no-prec-div  -qopt-prefetch
- -ffinite-math-only  -qopt-mem-layout-trans=3  -qopenmp  -DSPEC_OPENMP
- -nostandard-realloc-lhs  -align array32byte

**Benchmarks using Fortran, C, and C++:**
- -xCORE-AVX512  -ipo -O3  -no-prec-div  -qopt-prefetch
- -ffinite-math-only  -qopt-mem-layout-trans=3  -qopenmp  -DSPEC_OPENMP
- -nostandard-realloc-lhs  -align array32byte

---

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-A.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-A.xml
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For questions about this result, please contact the tester. For other inquiries, please contact info@spec.org.

Tested with SPEC CPU2017 v1.0.5 on 2019-05-23 22:36:14-0400.  
Originally published on 2019-06-25.