Lenovo Global Technology
ThinkSystem SR530
(3.00 GHz, Intel Xeon Gold 5217)

SPECrates2017_fp_base = 115
SPECrates2017_fp_peak = Not Run

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Hardware

CPU Name: Intel Xeon Gold 5217
Max MHz.: 3700
Nominal: 3000
Enabled: 16 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: 11 MB I+D on chip per chip
Other: None
Memory: 192 GB (12 x 16 GB 2Rx8 PC4-2933Y-R, running at 2666)
Storage: 1 x 960 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: No
Firmware: Lenovo BIOS Version TEE135L 2.10 released Jan-2019
File System: xfs
System State: Run level 3 (multi-user)
Base Pointers: 64-bit
Peak Pointers: Not Applicable
Other: None
**Lenovo Global Technology**  
ThinkSystem SR530  
(3.00 GHz, Intel Xeon Gold 5217)

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

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SPECrate2017_fp_base = 115  
SPECrate2017_fp_peak = Not Run

Results appear in the order in which they were run. Bold underlined text indicates a median measurement.

**Submit Notes**

The numactl mechanism was used to bind copies to processors. The config file option 'submit' was used to generate numactl commands to bind each copy to a specific processor. For details, please see the config file.

**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:  
LD_LIBRARY_PATH = "/home/cpu2017-1.0.5-ic19.0u1/lib/intel64"

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  
runcpu command invoked through numactl i.e.:  
  numactl --interleave=all runcpu <etc>  
Yes: The test sponsor attests, as of date of publication, that CVE-2017-5754 (Meltdown) is mitigated in the system as tested and documented.

(Continued on next page)
Lenovo Global Technology

ThinkSystem SR530
(3.00 GHz, Intel Xeon Gold 5217)

SPEC CPU2017 Floating Point Rate Result

Copyright 2017-2019 Standard Performance Evaluation Corporation

SPECrate2017_fp_base = 115
SPECrate2017_fp_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)

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.

Platform Notes

BIOS configuration:
Choose Operating Mode set to Maximum Performance
Choose Operating Mode set to Custom Mode
MONITOR/MWAIT set to Enable
LLC dead line alloc set to Disable
Sysinfo program /home/cpu2017-1.0.5-ic19.0u1/bin/sysinfo
Rev: r5974 of 2018-05-19 9bcde8f2999c33d61f64985e45859ea9
running on linux-yjm3 Tue Apr 16 18:35:01 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 5217 CPU @ 3.00GHz
  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 : 8
siblings : 16
physical 0: cores 0 1 2 3 4 5 6 7
physical 1: cores 0 1 2 3 4 5 6 7

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: 2
Core(s) per socket: 8
Socket(s): 2
NUMA node(s): 2
Vendor ID: GenuineIntel

(Continued on next page)
Lenovo Global Technology

ThinkSystem SR530
(3.00 GHz, Intel Xeon Gold 5217)

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

SPECrete2017_fp_base = 115
SPECrete2017_fp_peak = Not Run

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

Platform Notes (Continued)

CPU family: 6
Model: 85
Model name: Intel(R) Xeon(R) Gold 5217 CPU @ 3.00GHz
Stepping: 6
CPU MHz: 3000.000
CPU max MHz: 3700.000
CPU min MHz: 1200.000
BogoMIPS: 6000.00
Virtualization: VT-x
L1d cache: 32K
L1i cache: 32K
L2 cache: 1024K
L3 cache: 11264K
NUMA node0 CPU(s): 0-7,16-23
NUMA node1 CPU(s): 8-15,24-31
Flags: fpu vme de pse tsc msr pae mce cmov pat pse36 clflush dts ept ds cpl pe

From numactl --hardware WARNING: a numactl 'node' might or might not correspond to a physical chip.

From /proc/meminfo
MemTotal: 197704268 kB
HugePages_Total: 0

(Continued on next page)
Lenovo Global Technology
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SPECrate2017_fp_base = 115
SPECrate2017_fp_peak = Not Run

**Platform Notes (Continued)**

Hugepagesize: 2048 kB

From /etc/*release* /etc/*version*

SuSE-release:
  SUSE Linux Enterprise Server 12 (x86_64)
  VERSION = 12
  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 Apr 16 17:23

SPEC is set to: /home/cpu2017-1.0.5-ic19.0u1
  Filesystem     Type  Size  Used Avail Use% Mounted on
  /dev/sda3      xfs  892G   31G  861G   4% /

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 -[TEE135L-2.10]- 01/10/2019
  Memory:
    12x SK Hynix HMA82GR7CJR8N-WM 16 GB 2 rank 2933, configured at 2666

(End of data from sysinfo program)
**Lenovo Global Technology**

ThinkSystem SR530  
(3.00 GHz, Intel Xeon Gold 5217)

**SPECrater2017_fp_base** = 115

**SPECrater2017_fp_peak** = Not Run

---

**Compiler Version Notes**

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Intel (R) C Intel (R) 64 Compiler for applications running on Intel (R) 64,  
Version 19.0.1.144 Build 20181018  
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Intel (R) C++ Intel (R) 64 Compiler for applications running on Intel (R) 64,  
Version 19.0.1.144 Build 20181018  
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Intel (R) C++ Intel (R) 64 Compiler for applications running on Intel (R) 64,  
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Intel (R) Fortran Intel (R) 64 Compiler for applications running on Intel (R) 64,  
Version 19.0.1.144 Build 20181018  
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Intel (R) Fortran Intel (R) 64 Compiler for applications running on Intel (R) 64,  
Version 19.0.1.144 Build 20181018  
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FS 503.bwaves_r(base) 549.fotonik3d_r(base) 554.roms_r(base)

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(Continued on next page)
## Lenovo Global Technology
ThinkSystem SR530 (3.00 GHz, Intel Xeon Gold 5217)

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### SPECrate2017_fp_base = 115

### SPECrate2017_fp_peak = Not Run

---

#### Compiler Version Notes (Continued)

```plaintext
CC  521.wrf_r(base) 527.cam4_r(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.

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.

---

#### Base Compiler Invocation

- **C benchmarks:**
  ```plaintext
  icc -m64 -std=c11
  ```

- **C++ benchmarks:**
  ```plaintext
  icpc -m64
  ```

- **Fortran benchmarks:**
  ```plaintext
  ifort -m64
  ```

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

- **Benchmarks using both C and C++:**
  ```plaintext
  icpc -m64 icc -m64 -std=c11
  ```

- **Benchmarks using Fortran, C, and C++:**
  ```plaintext
  icpc -m64 icc -m64 -std=c11 ifort -m64
  ```

---

#### Base Portability Flags

- `503.bwaves_r -DSPEC_LP64`
- `507.cactuBSSN_r -DSPEC_LP64`
- `508.namd_r -DSPEC_LP64`
- `510.parest_r -DSPEC_LP64`
- `511.povray_r -DSPEC_LP64`
- `519.lm_r -DSPEC_LP64`
- `521.wrf_r -DSPEC_LP64 -DSPEC_CASE_FLAG -convert big_endian`
- `526.blender_r -DSPEC_LP64 -DSPEC_LINUX -funsigned-char`

(Continued on next page)
Lenovo Global Technology

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Test Sponsor: Lenovo Global Technology
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Hardware Availability: Apr-2019
Software Availability: Dec-2018

Base Portability Flags (Continued)

527.cam4_r: -DSPEC_LP64 -DSPEC_CASE_FLAG
538.imagick_r: -DSPEC_LP64
544.nab_r: -DSPEC_LP64
549.fotonik3d_r: -DSPEC_LP64
554.roms_r: -DSPEC_LP64

Base Optimization Flags

C benchmarks:
-xCORE-AVX512 -ipo -O3 -no-prec-div -qopt-prefetch
-ffinite-math-only -qopt-mem-layout-trans=4

C++ benchmarks:
-xCORE-AVX512 -ipo -O3 -no-prec-div -qopt-prefetch
-ffinite-math-only -qopt-mem-layout-trans=4

Fortran benchmarks:
-xCORE-AVX512 -ipo -O3 -no-prec-div -qopt-prefetch
-ffinite-math-only -qopt-mem-layout-trans=4 -auto
-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=4 -auto
-nostandard-realloc-lhs -align array32byte

Benchmarks using both C and C++:
-xCORE-AVX512 -ipo -O3 -no-prec-div -qopt-prefetch
-ffinite-math-only -qopt-mem-layout-trans=4

Benchmarks using Fortran, C, and C++:
-xCORE-AVX512 -ipo -O3 -no-prec-div -qopt-prefetch
-ffinite-math-only -qopt-mem-layout-trans=4 -auto
-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
## Lenovo Global Technology

### ThinkSystem SR530
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**Test Date:** Apr-2019  
**Hardware Availability:** Apr-2019  
**Software Availability:** Dec-2018

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Tested with SPEC CPU2017 v1.0.5 on 2019-04-16 06:35:00-0400.  