## Lenovo Global Technology

### ThinkSystem SR630

(3.00 GHz, Intel Xeon Gold 5217)

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

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

### SPECspeed2017_fp_base = 84.9

**SPECspeed2017_fp_peak = Not Run**

### Threads

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Threads</th>
<th>Peak</th>
<th>Base</th>
</tr>
</thead>
<tbody>
<tr>
<td>603.bwaves_s</td>
<td>16</td>
<td>87.9</td>
<td></td>
</tr>
<tr>
<td>607.cactuBSSN_s</td>
<td>16</td>
<td>70.7</td>
<td></td>
</tr>
<tr>
<td>619.lbm_s</td>
<td>16</td>
<td>91.3</td>
<td></td>
</tr>
<tr>
<td>621.wrf_s</td>
<td>16</td>
<td>46.7</td>
<td></td>
</tr>
<tr>
<td>628.pop2_s</td>
<td>16</td>
<td>57.9</td>
<td></td>
</tr>
<tr>
<td>638.imagick_s</td>
<td>16</td>
<td>60.7</td>
<td></td>
</tr>
<tr>
<td>644.nab_s</td>
<td>16</td>
<td>114</td>
<td></td>
</tr>
<tr>
<td>649.fotonik3d_s</td>
<td>16</td>
<td>67.6</td>
<td></td>
</tr>
<tr>
<td>654.roms_s</td>
<td>16</td>
<td>78.2</td>
<td></td>
</tr>
</tbody>
</table>

---

### Hardware

- **CPU Name:** Intel Xeon Gold 5217  
- **Max MHz.:** 3700  
- **Nominal:** 3000  
- **Enabled:** 16 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:** 11 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 19.0.1.144 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:** xfs  
- **System State:** Run level 3 (multi-user)  
- **Base Pointers:** 64-bit  
- **Peak Pointers:** Not Applicable  
- **Other:** None
Lenovo Global Technology
ThinkSystem SR630
(3.00 GHz, Intel Xeon Gold 5217)

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

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

Results Table

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Threads</th>
<th>Base Seconds</th>
<th>Base Ratio</th>
<th>Peak Seconds</th>
<th>Peak Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>603.bwaves_s</td>
<td>16</td>
<td>169</td>
<td>348</td>
<td>169</td>
<td>349</td>
</tr>
<tr>
<td>607.cactuBSSN_s</td>
<td>16</td>
<td>190</td>
<td>87.5</td>
<td>190</td>
<td>87.9</td>
</tr>
<tr>
<td>619.lbm_s</td>
<td>16</td>
<td>74.1</td>
<td>70.7</td>
<td>74.2</td>
<td>70.5</td>
</tr>
<tr>
<td>621.wrf_s</td>
<td>16</td>
<td>144</td>
<td>91.5</td>
<td>145</td>
<td>91.3</td>
</tr>
<tr>
<td>627.cam4_s</td>
<td>16</td>
<td>190</td>
<td>46.7</td>
<td>190</td>
<td>46.7</td>
</tr>
<tr>
<td>628.pop2_s</td>
<td>16</td>
<td>203</td>
<td>58.5</td>
<td>207</td>
<td>57.3</td>
</tr>
<tr>
<td>638.imagick_s</td>
<td>16</td>
<td>238</td>
<td>60.5</td>
<td>238</td>
<td>60.7</td>
</tr>
<tr>
<td>644.nab_s</td>
<td>16</td>
<td>154</td>
<td>114</td>
<td>154</td>
<td>114</td>
</tr>
<tr>
<td>649.fotonik3d_s</td>
<td>16</td>
<td>135</td>
<td>67.8</td>
<td>135</td>
<td>67.6</td>
</tr>
<tr>
<td>654.roms_s</td>
<td>16</td>
<td>201</td>
<td>78.5</td>
<td>202</td>
<td>77.8</td>
</tr>
</tbody>
</table>

SPECspeed2017_fp_base = 84.9
SPECspeed2017_fp_peak = Not Run

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-ic19.0u1/lib/intel64"
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.
Lenovo Global Technology

ThinkSystem SR630
(3.00 GHz, Intel Xeon Gold 5217)

| SPEC2017 fp_base | 84.9 |
| SPEC2017 fp_peak | Not Run |

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
Stale AtoS set to Enable
Sysinfo program /home/cpu2017-1.0.5-ic19.0u1/bin/sysinfo
Rev: r5974 of 2018-05-19 9bcde8f2999c33d61f64985e45859ea9
running on localhost.localdomain Sun Apr 14 19:08:22 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)
  16 "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 : 8
  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):             16
On-line CPU(s) list: 0-15
Thread(s) per core: 1
Core(s) per socket: 8
Socket(s):          2
NUMA node(s):       2
Vendor ID:          GenuineIntel
CPU family:         6
Model:              85
Model name:         Intel(R) Xeon(R) Gold 5217 CPU @ 3.00GHz
Stepping:           6
CPU MHz:            3000.000
BogoMIPS:           6000.00
Virtualization:     VT-x
L1d cache:          32K
L1i cache:          32K
L2 cache:           1024K

(Continued on next page)
**Platform Notes (Continued)**

```
L3 cache:              11264K
NUMA node0 CPU(s):     0-7
NUMA node1 CPU(s):     8-15
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
                       aperfmperf eagerfpu pni pclmulqdq dtes64 monitor ds_cpl vmx smx est tm2 ssse3 sdbg
                       fma cx16 xtrm pdcm pcid dca sse4_1 sse4_2 x2apic movbe popcnt tsc_deadline_timer aes
                       xsave avx f16c rdrand lahf_lm abm 3dnowprefetch cpb cat_l3 cdp_l3 intel_pt ssbd mba
                       ibrs ibpb stibp ibrs_enhanced tpr_shadow vmmi flexpriority ept vpid fsgsbase
                       tsc_adjust bmi1 hle avx2 smep bmi2  erts invpcid rtm cqm mpx rdt_a avx512f avx512dq
                       rdseed avx512_future Enabled
cache size: 11264 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
  node 0 size: 196281 MB
  node 0 free: 191145 MB
  node 1 cpus: 8 9 10 11 12 13 14 15
  node 1 size: 196608 MB
  node 1 free: 191306 MB
  node distances:
    node 0 1
    0: 10 21
    1: 21 10
From /proc/meminfo
  MemTotal:       395880016 kB
  HugePages_Total:       0
  Hugepagesize:       2048 kB
From /etc/*release* /etc/*version*
  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)"
```
## Lenovo Global Technology

**ThinkSystem SR630**  
(3.00 GHz, Intel Xeon Gold 5217)  

<table>
<thead>
<tr>
<th>SPECspeed2017_fp_base</th>
<th>84.9</th>
</tr>
</thead>
<tbody>
<tr>
<td>SPECspeed2017_fp_peak</td>
<td>Not Run</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>CPU2017 License</th>
<th>9017</th>
</tr>
</thead>
<tbody>
<tr>
<td>Test Sponsor</td>
<td>Lenovo Global Technology</td>
</tr>
<tr>
<td>Tested by</td>
<td>Lenovo Global Technology</td>
</tr>
<tr>
<td>Hardware Availability</td>
<td>Apr-2019</td>
</tr>
<tr>
<td>Software Availability</td>
<td>Nov-2018</td>
</tr>
<tr>
<td>Test Date</td>
<td>Apr-2019</td>
</tr>
</tbody>
</table>

### Platform Notes (Continued)

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

```
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

```
run-level 3 Apr 14 17:27
```

SPEC is set to: /home/cpu2017-1.0.5-ic19.0u1

```
<table>
<thead>
<tr>
<th>Filesystem</th>
<th>Type</th>
<th>Size</th>
<th>Used</th>
<th>Avail</th>
<th>Use%</th>
<th>Mounted on</th>
</tr>
</thead>
<tbody>
<tr>
<td>/dev/sda2</td>
<td>xfs</td>
<td>689G</td>
<td>15G</td>
<td>674G</td>
<td>3%</td>
<td>/home</td>
</tr>
</tbody>
</table>
```

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

(Continued on next page)
Lenovo Global Technology
ThinkSystem SR630
(3.00 GHz, Intel Xeon Gold 5217)

| SPECspeed2017_fp_base = 84.9 |
| SPECspeed2017_fp_peak = Not Run |

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

Compiler Version Notes (Continued)

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.

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

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
Lenovo Global Technology
ThinkSystem SR630
(3.00 GHz, Intel Xeon Gold 5217)

| SPECspeed2017_fp_base = | 84.9 |
| SPECspeed2017_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:** Nov-2018

### Base Portability Flags

- 603.bwaves_s: -DSPEC_LP64
- 607.cactuBSSN_s: -DSPEC_LP64
- 619.hm5_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=4
- -qopenmp
- -DSPEC_OPENMP

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

**Benchmarks using both Fortran and C:**
- xCORE-AVX512
- ipo
- -O3
- -no-prec-div
- -qopt-prefetch
- ffinite-math-only
- -qopt-mem-layout-trans=4
- -qopenmp
- -DSPEC_OPENMP
- -nostandard-realloc-lhs

**Benchmarks using Fortran, C, and C++:**
- xCORE-AVX512
- ipo
- -O3
- -no-prec-div
- -qopt-prefetch
- ffinite-math-only
- -qopt-mem-layout-trans=4
- -qopenmp
- -DSPEC_OPENMP
- -nostandard-realloc-lhs

The flags files that were used to format this result can be browsed at:


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
<table>
<thead>
<tr>
<th>Lenovo Global Technology</th>
<th>SPECspeed2017_fp_base = 84.9</th>
</tr>
</thead>
<tbody>
<tr>
<td>ThinkSystem SR630</td>
<td>SPECspeed2017_fp_peak = Not Run</td>
</tr>
<tr>
<td>(3.00 GHz, Intel Xeon Gold 5217)</td>
<td></td>
</tr>
<tr>
<td>CPU2017 License: 9017</td>
<td>Test Date: Apr-2019</td>
</tr>
<tr>
<td>Test Sponsor: Lenovo Global Technology</td>
<td>Hardware Availability: Apr-2019</td>
</tr>
<tr>
<td>Tested by: Lenovo Global Technology</td>
<td>Software Availability: Nov-2018</td>
</tr>
</tbody>
</table>

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.

Tested with SPEC CPU2017 v1.0.5 on 2019-04-14 07:08:21-0400.