Lenovo Global Technology
ThinkSystem SR630 V2
(3.00 GHz, Intel Xeon Gold 5317)

| SPECspeed®2017_fp_base = 136 |

| Tested by: Lenovo Global Technology |
| Test Date: Jul-2021 |
| Hardware Availability: Jul-2021 |
| Software Availability: Dec-2020 |

| SPECspeed®2017_fp_peak = Not Run |

| CPU2017 License: 9017 |
| Test Sponsor: Lenovo Global Technology |
| Threads  |
| 603.bwaves_s 24 |
| 607.cactuBSSN_s 24 |
| 619.lbm_s 24 |
| 621.wrf_s 24 |
| 627.cam4_s 24 |
| 628.pop2_s 24 |
| 638.imagick_s 24 |
| 644.nab_s 24 |
| 649.fotonik3d_s 24 |
| 654.roms_s 24 |

| Hardware |
| Software |

| CPU Name: Intel Xeon Gold 5317 |
| OS: Red Hat Enterprise Linux 8.3 (Ootpa) |
| Max MHz: 3600 |
| Kernel 4.18.0-240.el8.x86_64 |
| Nominal: 3000 |
| Compiler: Fortran: Version 2021.1 of Intel Fortran Compiler |
| Enabled: 24 cores, 2 chips |
| Classic Build 20201112 for Linux; |
| Orderable: 1.2 chips |
| C/C++: Version 2021.1 of Intel C/C++ Compiler |
| Cache L1: 32 KB I + 48 KB D on chip per core |
| Classic Build 20201112 for Linux |
| L2: 1.25 MB I+D on chip per core |
| Parallel: Yes |
| L3: 18 MB I+D on chip per chip |
| Firmware: Lenovo BIOS Version AFE111A 1.02 released May-2021 |
| Other: None |
| File System: xfs |
| Memory: 1 TB (32 x 32 GB 2Rx8 PC4-3200AA-R, running at 2933) |
| System State: Run level 3 (multi-user) |
| Storage: 1 x 960 GB SATA SSD |
| Base Pointers: 64-bit |
| Other: None |
| Other Pointers: Not Applicable |
| Power Management: BIOS and OS set to prefer performance at the cost of additional power usage |
SPECPower® 2017 Floating Point Speed Result

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CPU2017 License: 9017
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Results Table

<table>
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<tr>
<th>Benchmark</th>
<th>Threads</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Seconds</th>
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<td>123</td>
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<td>654.roms_s</td>
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<td>128</td>
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<td>124</td>
<td>127</td>
</tr>
</tbody>
</table>

SPECspeed®2017_fp_base = 136
SPECspeed®2017_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"

Environment Variables Notes
Environment variables set by runcpu before the start of the run:
KMP_AFFINITY = "granularity=fine,compact"
LD_LIBRARY_PATH = "/home/cpu2017-1.1.8-ic2021.1-revB/lib/intel64:/home/cpu2017-1.1.8-ic2021.1-revB/jre5.0.1-64"
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)
### General Notes (Continued)

jemalloc, a general purpose malloc implementation
built with the RedHat Enterprise 7.5, and the system compiler gcc 4.8.5

### Platform Notes

BIOS configuration:
Choose Operating Mode set to Maximum Performance and then set it to Custom Mode
MONITOR/MWAIT set to Enabled
C-States set to Legacy
Hyper-Threading set to Disabled
UPI Prefetcher set to Disabled
LLC Prefetch set to Enable

Sysinfo program /home/cpu2017-1.1.8-ic2021.1-revB/bin/sysinfo
Rev: r6622 of 2021-04-07 982a61ec0915b55891ef0e16aca6464d
running on localhost.localdomain Sun Jul 11 20:15:10 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 5317 CPU @ 3.00GHz
  2  "physical id" s (chips)
24 "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 : 12
siblings : 12
physical 0: cores 0 1 2 3 4 5 6 7 8 9 10 11
physical 1: cores 0 1 2 3 4 5 6 7 8 9 10 11
```

From lscpu from util-linux 2.32.1:

```
Architecture: x86_64
CPU op-mode(s): 32-bit, 64-bit
Byte Order: Little Endian
CPU(s): 24
On-line CPU(s) list: 0-23
Thread(s) per core: 1
Core(s) per socket: 12
Socket(s): 2
NUMA node(s): 2
Vendor ID: GenuineIntel
CPU family: 6
Model: 106
```
**SPEC CPU®2017 Floating Point Speed Result**

**Lenovo Global Technology**

ThinkSystem SR630 V2  
(3.00 GHz, Intel Xeon Gold 5317)

<table>
<thead>
<tr>
<th>SPECspeed®2017_fp_base</th>
<th>136</th>
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<tbody>
<tr>
<td>SPECspeed®2017_fp_peak</td>
<td>Not Run</td>
</tr>
</tbody>
</table>

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

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**Platform Notes (Continued)**

| Model name: | Intel(R) Xeon(R) Gold 5317 CPU @ 3.00GHz |
| Stepping: | 6 |
| CPU MHz: | 800.000 |
| BogoMIPS: | 6000.00 |
| Virtualization: | VT-x |
| L1d cache: | 48K |
| L1i cache: | 32K |
| L2 cache: | 1280K |
| L3 cache: | 18432K |
| NUMA node0 CPU(s): | 0-11 |
| NUMA node1 CPU(s): | 12-23 |

**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
aperfmperf pni pclmulqdq dtes64 monitor ds_cpl vmx smx est tm2 ssse3 sdbg fma cx16
xtrr pdcm pcid dca sse4_1 sse4_2 x2apic movcnt popcnt tsc_deadline_timer aes xsave
avx f16c rdrand lahf_lm abml 3dnowprefetch cpuid_fault epb cat_l3 invpcid_single
intel_pni ssbd mba ibrs ibpb stibp ibrs_enhanced tpr_shadow vni rflexpriority ept
vpid ept_ad fsgsbase tsc_adjust bmi1 hle avx2 smep bmi2 ets invpcid cqm rdt_a
avx512f avx512dq rdseed adx smap avx512ifma clflushopt clwb intel_pt avx512cd sha ni
avx512bw avx512vl xsavesopt xsaveopt xsavec xgetbv1 xsaves avx制度 cqm_occup_llc cqm_mbb_total
cqm_mbb_local split_lock_detect wbench ida arat pi in pts avx512vmbi ump pkv
ospke avx512_vmbi2 gfnl vaes vpclmulqdq avx512_vnni avx512_bitalg tme
avx512_vpconfcheck 1a57 rdpid md_clear pconfom flush_l1d arch_capabilities

---

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 |
| node 0 size: | 507273 MB |
| node 0 free: | 511409 MB |
| node 1 cpus: | 12 13 14 15 16 17 18 19 20 21 22 23 |
| node 1 size: | 507222 MB |
| node 1 free: | 515184 MB |

**node distances:**

| node | 0 1 |
| 0: | 10 20 |
| 1: | 20 10 |

---

From `/proc/meminfo`

| MemTotal: | 1056497548 kB |
| HugePages_Total: | 0 |
| Hugepagesize: | 2048 kB |
Lenovo Global Technology
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CPU2017 License: 9017
Test Sponsor: Lenovo Global Technology
Tested by: Lenovo Global Technology

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/swapsgs 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 Jul 11 19:14

SPEC is set to: /home/cpu2017-1.1.8-ic2021.1-revB
  Filesystem   Type  Size  Used Avail Use% Mounted on
  /dev/sdb4    xfs   818G  22G   796G   3%  /home

From /sys/devices/virtual/dmi/id
  Vendor: Lenovo
  Product: ThinkSystem SR630 V2 MB

(Continued on next page)
Lenovo Global Technology
ThinkSystem SR630 V2
(3.00 GHz, Intel Xeon Gold 5317)

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Platform Notes (Continued)

Product Family: ThinkSystem
Serial: 1234567890

Additional information from dmidecode 3.2 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: AFE111A-1.02
BIOS Date: 05/07/2021
BIOS Revision: 1.2
Firmware Revision: 1.10

(End of data from sysinfo program)

Compiler Version Notes

==============================================================================
C                  | 619.lbm_s(base) 638.imagick_s(base) 644.nab_s(base)
------------------------------------------------------------------------------
Intel(R) C 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.
------------------------------------------------------------------------------

C++, C, Fortran | 607.cactuBSSN_s(base)
==============================================================================
Intel(R) C++ 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.
Inte(R) C 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.
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.

==============================================================================
Fortran             | 603.bwaves_s(base) 649.fotonik3d_s(base) 654.roms_s(base)
(Continued on next page)
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Tested by: Lenovo Global Technology

SPECspeed®2017_fp_base = 136
SPECspeed®2017_fp_peak = Not Run

Compiler Version Notes (Continued)

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.

------------------------------------------------------------------------------
Fortran, C      | 621.wrf_s(base) 627.cam4_s(base) 628.pop2_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.
Intel(R) C 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.

Base Compiler Invocation

C benchmarks:
icc
Fortran benchmarks:
ifort
Benchmarks using both Fortran and C:
ifort icc
Benchmarks using Fortran, C, and C++:
icpc icc ifort

Base Portability Flags

603.bwaves_s: -DSPEC_LP64
607.cactuBSSN_s: -DSPEC_LP64
619.lbm_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
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SPECs^2017 fp_base = 136
SPECs^2017 fp_peak = Not Run

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Test Date: Jul-2021
Hardware Availability: Jul-2021
Software Availability: Dec-2020

Base Optimization Flags

C benchmarks:
-m64 -std=c11 -xCORE-AVX2 -ipo -O3 -no-prec-div -qopt-prefetch
-ffinite-math-only -qopt-mem-layout-trans=4 -qopenmp -DSPEC_OPENMP
-mbranches-within-32B-boundaries

Fortran benchmarks:
-m64 -Wl,-z,muldefs -DSPEC_OPENMP -xCORE-AVX2 -ipo -O3 -no-prec-div
-qopt-prefetch -ffinite-math-only -qopt-mem-layout-trans=4 -qopenmp
-nostandard-realloc-lhs -mbranches-within-32B-boundaries
-L/usr/local/jemalloc64-5.0.1/lib -ljemalloc

Benchmarks using both Fortran and C:
-m64 -std=c11 -Wl,-z,muldefs -xCORE-AVX2 -ipo -O3 -no-prec-div
-qopt-prefetch -ffinite-math-only -qopt-mem-layout-trans=4 -qopenmp
-DSPEC_OPENMP -mbranches-within-32B-boundaries -nostandard-realloc-lhs
-L/usr/local/jemalloc64-5.0.1/lib -ljemalloc

Benchmarks using Fortran, C, and C++:
-m64 -std=c11 -Wl,-z,muldefs -xCORE-AVX2 -ipo -O3 -no-prec-div
-qopt-prefetch -ffinite-math-only -qopt-mem-layout-trans=4 -qopenmp
-DSPEC_OPENMP -mbranches-within-32B-boundaries -nostandard-realloc-lhs
-L/usr/local/jemalloc64-5.0.1/lib -ljemalloc

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-F.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-F.xml
http://www.spec.org/cpu2017/flags/Intel-ic2021-official-linux64_revA.xml

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

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