Lenovo Global Technology
ThinkSystem SR630 V2
(2.10 GHz, Intel Xeon Gold 6338T)

SPECspeed®2017_fp_base = 181
SPECspeed®2017_fp_peak = Not Run

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<td>621.wrf_s 48</td>
<td>133</td>
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<tr>
<td>627.cam4_s 48</td>
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<td>628.pop2_s 48</td>
<td>86</td>
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<tr>
<td>638.imagick_s 48</td>
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<tr>
<td>644.nab_s 48</td>
<td>116</td>
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<tr>
<td>649.fotonik3d_s 48</td>
<td>226</td>
</tr>
<tr>
<td>654.roms_s 48</td>
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</tr>
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</table>

Hardware
CPU Name: Intel Xeon Gold 6338T
Max MHz: 3400
Nominal: 2100
Enabled: 48 cores, 2 chips
Orderable: 1.2 chips
Cache L1: 32 KB I + 48 KB D on chip per core
L2: 1.25 MB I+D on chip per core
L3: 36 MB I+D on chip per chip
Other: None
Memory: 1 TB (32 x 32 GB 2Rx8 PC4-3200AA-R)
Storage: 1 x 960 GB SATA SSD
Other: None

Software
OS: Red Hat Enterprise Linux 8.3 (Ootpa)
Kernel 4.18.0-240.el8.x86_64
Compiler: Fortran: Version 2021.1 of Intel Fortran Compiler
Classic Build 20201112 for Linux;
C/C++: Version 2021.1 of Intel C/C++ Compiler
Classic Build 20201112 for Linux
Parallel: Yes
Firmware: Lenovo BIOS Version AFE111A 1.02 released May-2021
File System: xfs
System State: Run level 3 (multi-user)
Base Pointers: 64-bit
Peak Pointers: Not Applicable
Other: jemalloc memory allocator V5.0.1
Power Management: BIOS and OS set to prefer performance at the cost of additional power usage
Lenovo Global Technology
ThinkSystem SR630 V2 (2.10 GHz, Intel Xeon Gold 6338T)

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

Results Table

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<tr>
<td>649.fotonik3d_s</td>
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</tr>
</tbody>
</table>

SPECspeed®2017_fp_base = 181
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/je5.0.1-64"
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 98a61ec0915b55891ef0e16aca6c464
running on localhost.localdomain Sun Jul 4 03:16:07 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 6338T CPU @ 2.10GHz
  2 "physical id"s (chips)
  48 "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 : 24
  siblings : 24
  physical 0: cores 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23
  physical 1: cores 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23

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):             48
  On-line CPU(s) list: 0-47
  Thread(s) per core: 1
  Core(s) per socket: 24
  Socket(s):          2
  NUMA node(s):       2
  Vendor ID:          GenuineIntel
  CPU family:         6
  Model:              106

(Continued on next page)
**SPEC CPU® 2017 Floating Point Speed Result**

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**Lenovo Global Technology**

**ThinkSystem SR630 V2**

(2.10 GHz, Intel Xeon Gold 6338T)

---

**CPU2017 License:** 9017  
**Test Sponsor:** Lenovo Global Technology  
**Tested by:** Lenovo Global Technology  
**Test Date:** Jul-2021  
**Hardware Availability:** Jul-2021  
**Software Availability:** Dec-2020

---

**SPECspeed®2017_fp_base = 181**  
**SPECspeed®2017_fp_peak = Not Run**

---

**Platform Notes (Continued)**

Model name: Intel(R) Xeon(R) Gold 6338T CPU @ 2.10GHz  
Stepping: 6  
CPU MHz: 2695.457  
BogoMIPS: 4200.00  
Virtualization: VT-x  
L1d cache: 48K  
L1i cache: 32K  
L2 cache: 1280K  
L3 cache: 36864K  
NUMA node0 CPU(s): 0-23  
NUMA node1 CPU(s): 24-47  
Flags: fpu vme de pse tsc msr pae mca cmov pat pse36 clflush dts acpi mmx fxsr sse sse2 ss ht tm pbe syscall nx pdpe1gb rdtscp lm constant_tsc 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 xctr pdcm pcid dca sse4_1 sse4_2 x2apic movcdn popcnt tsc_deadline_timer aes xsave avx f16c rdrand lahf_lm abm 3dnowprefetch cpuid_fault ebx cat_l3 invpcid_single intel_pni ssbd mba ibrs ibpb stibp ibrs_enhanced tpr_shadow vnmi flexpriority ept vpid ept_ad fsgsbase tsc_adjust bmi1 hle avx2 smep bmi2 erms invpcid cqm rdt_a avx512f avx512dq rdseed adx smap avx512ifma clflushopt clwb intel_pt avx512cd sha ni avx512bw avx512vl xsaveopt xsavevc xsavec xsavecsv xckmt xsavec xsavecsv cqm_occup_llc cqm_mbb_total cqm_mbb_local split_lock_detect wbinvd dtherm ida arat pln pts avx512vmbmi umip pku ospk avx512_vmbmi2 gfni vaes vpclmulqdq avx512_vnni avx512_vbjud tme avx512_vpopcntdq la57 rdpid md_clear pconfig flush_l1d arch_capabilities

/proc/cpuinfo cache data  
cache size : 36864 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 16 17 18 19 20 21 22 23  
node 0 size: 493518 MB  
node 0 free: 514295 MB  
node 1 cpus: 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47  
node 1 size: 493459 MB  
node 1 free: 514883 MB  
node distances:  
node 0 1  
0: 10 20  
1: 20 10

From /proc/meminfo  
MemTotal: 1056492360 KB  
 HugePages_Total: 0  
 Hugepagesize: 2048 KB

(Continued on next page)
SPEC CPU®2017 Floating Point Speed Result

Lenovo Global Technology
ThinkSystem SR630 V2
(2.10 GHz, Intel Xeon Gold 6338T)

SPECspeed®2017_fp_base = 181
SPECspeed®2017_fp_peak = Not Run

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/swaps 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 4 01:49

SPEC is set to: /home/cpu2017-1.1.8-ic2021.1-revB

Filesystem Type Size Used Avail Use% Mounted on
/dev/sdb4 xfs 819G 92G 727G 12% /home

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

(Continued on next page)
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ThinkSystem SR630 V2
(2.10 GHz, Intel Xeon Gold 6338T)

SPECspeed\textsuperscript{2017}\_fp\_base = 181
SPECspeed\textsuperscript{2017}\_fp\_peak = Not Run

CPU2017 License: 9017
Test Sponsor: Lenovo Global Technology
Test Date: Jul-2021
Hardware Availability: Jul-2021
Tested by: Lenovo Global Technology
Software Availability: Dec-2020

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

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

<table>
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<tr>
<th>Compiler</th>
<th>Notes</th>
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<tr>
<td>C</td>
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<tr>
<td>Intel(R) C Intel(R) 64 Compiler Classic for applications running on Intel(R) 64, Version 2021.1 Build 20201112_000000</td>
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<td>Copyright (C) 1985-2020 Intel Corporation. All rights reserved.</td>
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Lenovo Global Technology
ThinkSystem SR630 V2
(2.10 GHz, Intel Xeon Gold 6338T)

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

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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

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
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Base Compiler Invocation

C benchmarks:
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SPECspeed®2017_fp_base = 181
SPECspeed®2017_fp_peak = Not Run

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
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  - -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-E.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-E.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.

Tested with SPEC CPU®2017 v1.1.8 on 2021-07-03 15:16:06-0400.
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