## Lenovo Global Technology

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

<table>
<thead>
<tr>
<th>SPECspeed®2017_int_base</th>
<th>11.5</th>
</tr>
</thead>
<tbody>
<tr>
<td>SPECspeed®2017_int_peak</td>
<td>Not Run</td>
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**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

### Threads

<table>
<thead>
<tr>
<th>Test</th>
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<th>SPECspeed®2017_int_base</th>
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<tr>
<td><strong>600.perlbench_s</strong></td>
<td>48</td>
<td>7.21</td>
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<tr>
<td><strong>602.gcc_s</strong></td>
<td>48</td>
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</tr>
<tr>
<td><strong>605.mcf_s</strong></td>
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<td><strong>620.omnetpp_s</strong></td>
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<tr>
<td><strong>623.xalancbmk_s</strong></td>
<td>48</td>
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<tr>
<td><strong>625.x264_s</strong></td>
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<td>17.2</td>
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<tr>
<td><strong>631.deepsjeng_s</strong></td>
<td>48</td>
<td>20.8</td>
</tr>
<tr>
<td><strong>641.leela_s</strong></td>
<td>48</td>
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<tr>
<td><strong>648.exchange2_s</strong></td>
<td>48</td>
<td></td>
</tr>
<tr>
<td><strong>657.xz_s</strong></td>
<td>48</td>
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</tr>
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### Hardware

<table>
<thead>
<tr>
<th>Item</th>
<th>Value</th>
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<tbody>
<tr>
<td><strong>CPU Name:</strong></td>
<td>Intel Xeon Gold 5317</td>
</tr>
<tr>
<td><strong>Max MHz:</strong></td>
<td>3600</td>
</tr>
<tr>
<td><strong>Nominal:</strong></td>
<td>3000</td>
</tr>
<tr>
<td><strong>Enabled:</strong></td>
<td>24 cores, 2 chips, 2 threads/core</td>
</tr>
<tr>
<td><strong>Orderable:</strong></td>
<td>1.2 chips</td>
</tr>
<tr>
<td><strong>Cache L1:</strong></td>
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<tr>
<td><strong>Cache L2:</strong></td>
<td>1.25 MB I+D on chip per core</td>
</tr>
<tr>
<td><strong>Cache L3:</strong></td>
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<tr>
<td><strong>Other:</strong></td>
<td>None</td>
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<tr>
<td><strong>Memory:</strong></td>
<td>1 TB (32 x 32 GB 2Rx8 PC4-3200AA-R, running at 2933)</td>
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<tr>
<td><strong>Storage:</strong></td>
<td>1 x 960 GB SATA SSD</td>
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<td><strong>Other:</strong></td>
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### Software

<table>
<thead>
<tr>
<th>Item</th>
<th>Value</th>
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<tbody>
<tr>
<td><strong>OS:</strong></td>
<td>Red Hat Enterprise Linux 8.3 (Ootpa)</td>
</tr>
<tr>
<td><strong>Kernel:</strong></td>
<td>4.18.0-240.el8.x86_64</td>
</tr>
<tr>
<td><strong>Compiler:</strong></td>
<td>C/C++, Version 2021.1 of Intel oneAPI DPC++/C++ Compiler Build 20201113 for Linux; Fortran: Version 2021.1 of Intel Fortran Compiler Classic Build 20201112 for Linux</td>
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<tr>
<td><strong>Parallel:</strong></td>
<td>Yes</td>
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<tr>
<td><strong>Firmware:</strong></td>
<td>Lenovo BIOS Version AFE111A 1.02 released May-2021</td>
</tr>
<tr>
<td><strong>File System:</strong></td>
<td>xfs</td>
</tr>
<tr>
<td><strong>System State:</strong></td>
<td>Run level 3 (multi-user)</td>
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<tr>
<td><strong>Base Pointers:</strong></td>
<td>64-bit</td>
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<tr>
<td><strong>Peak Pointers:</strong></td>
<td>Not Applicable</td>
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<tr>
<td><strong>Other:</strong></td>
<td>jemalloc memory allocator V5.0.1</td>
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<tr>
<td><strong>Power Management:</strong></td>
<td>BIOS and OS set to prefer performance at the cost of additional power usage</td>
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</table>
## Results Table

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Base Threads</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Peak Threads</th>
<th>Seconds</th>
<th>Ratio</th>
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</tbody>
</table>

**SPECspeed®2017_int_base = 11.5**

**SPECspeed®2017_int_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,scatter"
- LD_LIBRARY_PATH = 
  
  "/home/cpu2017-1.1.8-ic2021.1-revB/lib/intel64:/home/cpu2017-1.1.8-ic202
  
  1.1-revB/xe5.0.1-64"
- 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)
**SPEC CPU®2017 Integer Speed Result**

**Lenovo Global Technology**

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

| SPECspeed®2017_int_base = 11.5 |
| SPECspeed®2017_int_peak = Not Run |

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

---

**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  
C1 Enhanced Mode set to Enabled

Sysinfo program /home/cpu2017-1.1.8-ic2021.1-revB/bin/sysinfo  
Rev: r6622 of 2021-04-07 982a61ec9155b55891ef0e16aca64d  
running on localhost.localdomain Sat Jul 10 23:42:27 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)  
  - 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 : 12  
  - siblings : 24  
  - 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): 48  
- On-line CPU(s) list: 0-47  
- Thread(s) per core: 2  
- Core(s) per socket: 12  
- Socket(s): 2  
- NUMA node(s): 2  
- Vendor ID: GenuineIntel  
- CPU family: 6  
- Model: 106  
- Model name: Intel(R) Xeon(R) Gold 5317 CPU @ 3.00GHz  
- Stepping: 6

(Continued on next page)
Lenovo Global Technology
ThinkSystem SR630 V2
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SPECspeed®2017_int_base = 11.5
SPECspeed®2017_int_peak = Not Run

Platform Notes (Continued)

CPU MHz: 1723.939
BogoMIPS: 6000.00
Virtualization: VT-x
L1d cache: 48K
L1i cache: 32K
L2 cache: 1280K
L3 cache: 18432K
NUMA node0 CPU(s): 0-11,24-35
NUMA node1 CPU(s): 12-23,36-47

Flags: fpu vme de pse tsc msr pae mce 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 xtr nahc pcid dca sse4_1 sse4_2 x2apic movbe popcnt tsc_deadline_timer aes xsave avx f16c rdrand lahf_lm abm 3dnowprefetch cpuid_fault epb cat_l3 invpcid_single intel_pni ssbd mba ibrs ibpb ibrs_enhanced tpr_shadow vnmi flexpriority ept vpid fsgsbase tsc_adjust bmi1 hle avx2 smep bmi2 ets invpcid cqm rdt_a

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 24 25 26 27 28 29 30 31 32 33 34 35
node 0 size: 499252 MB
node 0 free: 514902 MB
node 1 cpus: 12 13 14 15 16 17 18 19 20 21 22 23 36 37 38 39 40 41 42 43 44 45 46 47
node 1 size: 499513 MB
node 1 free: 514701 MB
node distances:
node 0: 10 20
node 1: 20 10

From /proc/meminfo
MemTotal: 1056492348 kB
HugePages_Total: 0
Hugepagesize: 2048 kB

/sbin/tuned-adm active
Current active profile: throughput-performance

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

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

```bash
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 10 21:34

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

<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>
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</thead>
<tbody>
<tr>
<td>/dev/sdb4</td>
<td>xfs</td>
<td>818G</td>
<td>22G</td>
<td>796G</td>
<td>3%</td>
<td>/home</td>
</tr>
</tbody>
</table>

From `/sys/devices/virtual/dmi/id`

<table>
<thead>
<tr>
<th>Vendor:</th>
<th>Lenovo</th>
</tr>
</thead>
<tbody>
<tr>
<td>Product:</td>
<td>ThinkSystem SR630 V2 MB</td>
</tr>
<tr>
<td>Product Family:</td>
<td>ThinkSystem</td>
</tr>
<tr>
<td>Serial:</td>
<td>1234567890</td>
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</table>
LENovo Global Technology
ThinkSystem SR630 V2
(3.00 GHz, Intel Xeon Gold 5317)

SPECspeed®2017_int_base = 11.5
SPECspeed®2017_int_peak = Not Run

Platform Notes (Continued)

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

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<table>
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<tr>
<th>C</th>
<th>600.perlbench_s(base) 602.gcc_s(base) 605.mcf_s(base) 625.x264_s(base) 657.xz_s(base)</th>
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<tbody>
<tr>
<td></td>
<td>Intel(R) oneAPI DPC++/C++ Compiler for applications running on Intel(R) 64, Version 2021.1 Build 20201113</td>
</tr>
<tr>
<td></td>
<td>Copyright (C) 1985-2020 Intel Corporation. All rights reserved.</td>
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==============================================================================

==============================================================================
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</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Intel(R) oneAPI DPC++/C++ Compiler for applications running on Intel(R) 64, Version 2021.1 Build 20201113</td>
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<tr>
<td></td>
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==============================================================================

==============================================================================
<table>
<thead>
<tr>
<th>Fortran</th>
<th>648.exchange2_s(base)</th>
</tr>
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<tbody>
<tr>
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<td>Intel(R) Fortran Intel(R) 64 Compiler Classic for applications running on Intel(R) 64, Version 2021.1 Build 20201112_000000</td>
</tr>
<tr>
<td></td>
<td>Copyright (C) 1985-2020 Intel Corporation. All rights reserved.</td>
</tr>
</tbody>
</table>
==============================================================================
**Lenovo Global Technology**  
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**Test Sponsor:** Lenovo Global Technology  
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**Test Date:** Jul-2021  
**Hardware Availability:** Jul-2021  
**Software Availability:** Dec-2020

### Base Compiler Invocation

- **C benchmarks:** icx
- **C++ benchmarks:** icpx
- **Fortran benchmarks:** ifort

### Base Portability Flags

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Flags</th>
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<tr>
<td>perlbench_s</td>
<td>-DSPEC_LP64 -DSPEC_LINUX_X64</td>
</tr>
<tr>
<td>gcc_s</td>
<td>-DSPEC_LP64</td>
</tr>
<tr>
<td>mcf_s</td>
<td>-DSPEC_LP64</td>
</tr>
<tr>
<td>omnetpp_s</td>
<td>-DSPEC_LP64</td>
</tr>
<tr>
<td>xalancbmk_s</td>
<td>-DSPEC_LP64 -DSPEC_LINUX</td>
</tr>
<tr>
<td>x264_s</td>
<td>-DSPEC_LP64</td>
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<td>leela_s</td>
<td>-DSPEC_LP64</td>
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<td>exchange2_s</td>
<td>-DSPEC_LP64</td>
</tr>
<tr>
<td>xz_s</td>
<td>-DSPEC_LP64</td>
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</table>

### Base Optimization Flags

- **C benchmarks:**
  - -DSPEC_OPENMP -std=c11 -m64 -fiopenmp -Wl,-z,muldefs -xCORE-AVX2  
  - -O3 -ffast-math -flto -mfpmath=sse -funroll-loops  
  - -qopt-mem-layout-trans=4 -mbranches-within-32B-boundaries  
  - -L/usr/local/jemalloc64-5.0.1/lib -ljemalloc

- **C++ benchmarks:**
  - -DSPEC_OPENMP -m64 -Wl,-z,muldefs -xCORE-AVX2 -O3 -ffast-math -flto  
  - -mfpmath=sse -funroll-loops -qopt-mem-layout-trans=4  
  - -mbranches-within-32B-boundaries  
  - -L/opt/intel/oneapi/compiler/2021.1.1/linux/compiler/lib/intel64_lin/  
  - -lqkmalloc

- **Fortran benchmarks:**
  - -m64 -xCORE-AVX2 -O3 -ipo -no-prec-div -qopt-mem-layout-trans=4  
  - -nostandard-realloc-lhs -align array32byte -auto  
  - -mbranches-within-32B-boundaries
### Lenovo Global Technology

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

| SPECspeed\textsuperscript{2017\_int\_base} | 11.5 |
| SPECspeed\textsuperscript{2017\_int\_peak} | Not Run |

| **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 |

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