Lenovo Global Technology
ThinkSystem SD630 V2
(2.00 GHz, Intel Xeon Gold 6330)

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

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<th>Benchmark</th>
<th>SPECspeed®2017_base</th>
<th>Threads</th>
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<tbody>
<tr>
<td>603.bwaves_s</td>
<td>239</td>
<td>56</td>
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<tr>
<td>607.cactuBSSN_s</td>
<td>138</td>
<td>56</td>
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<tr>
<td>619.lbm_s</td>
<td>135</td>
<td>56</td>
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<tr>
<td>621.wrf_s</td>
<td>130</td>
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<td>627.cam4_s</td>
<td>72.4</td>
<td>56</td>
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<tr>
<td>628.pop2_s</td>
<td>201</td>
<td>56</td>
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<tr>
<td>638.imagick_s</td>
<td>109</td>
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<tr>
<td>644.nab_s</td>
<td>322</td>
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<tr>
<td>649.fotonik3d_s</td>
<td>209</td>
<td>56</td>
</tr>
<tr>
<td>654.roms_s</td>
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**Hardware**

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<tr>
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<tr>
<td>CPU Name:</td>
<td>Intel Xeon Gold 6330</td>
</tr>
<tr>
<td>Max MHz:</td>
<td>3100</td>
</tr>
<tr>
<td>Nominal:</td>
<td>2000</td>
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<tr>
<td>Enabled:</td>
<td>56 cores, 2 chips</td>
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<tr>
<td>Orderable:</td>
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<tr>
<td>Cache L1:</td>
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<td>Cache L2:</td>
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<td>Cache L3:</td>
<td>42 MB I+D on chip per chip</td>
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<tr>
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<tr>
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<td>512 GB (16 x 32 GB 2Rx4 PC4-3200AA-R, running at 2933)</td>
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<tr>
<td>Storage:</td>
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**Software**

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<td>Parallel:</td>
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<td>File System:</td>
<td>xfs</td>
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<tr>
<td>System State:</td>
<td>Run level 3 (multi-user)</td>
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<td>Peak Pointers:</td>
<td>Not Applicable</td>
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<td>Other:</td>
<td>jemalloc memory allocator V5.0.1</td>
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<tr>
<td>Power Management:</td>
<td>BIOS and OS set to prefer performance at the cost of additional power usage</td>
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</table>
SPECCPU®2017 Floating Point Speed Result

Lenovo Global Technology
ThinkSystem SD630 V2
(2.00 GHz, Intel Xeon Gold 6330)

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

Results Table

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<th>Benchmark</th>
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</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/cpu2017-1.1.5-ic2021.1-revB/lib/intel64:/home/cpu2017-1.1.5-ic2021.1-revB/software-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)


**Lenovo Global Technology**

**ThinkSystem SD630 V2**  
(2.00 GHz, Intel Xeon Gold 6330)

| SPECsium®2017_fp_base = | 181 |
| SPECsium®2017_fp_peak = Not Run |

---

**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  
CPU P-state Control set to Autonomous  
C-States set to Autonomous  
Hyper-Threading set to Disabled  
Adjacent Cache Prefetch set to Disabled  
LLC Prefetch set to Enable

Sysinfo program /home/cpu2017-1.1.5-ic2021.1-revB/bin/sysinfo  
Rev: r6538 of 2020-09-24 e8664e66d2d7080afeaa89d4b38e2f1c  
running on localhost.localdomain Wed May 12 06:37:31 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 6330 CPU @ 2.00GHz  
- 2 "physical id"s (chips)  
- 56 "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 : 28  
- siblings : 28  
- 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 24 25 26 27  
- 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 24 25 26 27

From lscpu:

- Architecture: x86_64  
- CPU op-mode(s): 32-bit, 64-bit  
- Byte Order: Little Endian  
- CPU(s): 56  
- On-line CPU(s) list: 0-55  
- Thread(s) per core: 1  
- Core(s) per socket: 28  
- Socket(s): 2  
- NUMA node(s): 2  
- Vendor ID: GenuineIntel

(Continued on next page)
Lenovo Global Technology
ThinkSystem SD630 V2
(2.00 GHz, Intel Xeon Gold 6330)

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

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<table>
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<th>CPU family:</th>
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<tbody>
<tr>
<td>Model:</td>
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<tr>
<td>Model name:</td>
<td>Intel(R) Xeon(R) Gold 6330 CPU @ 2.00GHz</td>
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<td>32K</td>
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<tr>
<td>L2 cache:</td>
<td>1280K</td>
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<td>43008K</td>
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<tr>
<td>NUMA node0 CPU(s):</td>
<td>0-27</td>
</tr>
<tr>
<td>NUMA node1 CPU(s):</td>
<td>28-55</td>
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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
aperfmprefl pni pclmulqdq dtes64 monitor ds_cpl vmx smx est tm2 ssse3 sdbg fma cx16
xtpr pdcm 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_ppln ssbd mba ibrs ibpb stibp ibrs_enhanced tpr_shadow vmmi flexpriority ept
vpid ept_ad fsgsbase tsc_adjust bmov hle avx2 smep bmi2 erms invpcid cmq rdt_a
avx512f avx512dq rdseed adx smap avx512ifma clflushopt clwb intel_pt avx512cd sha ni
avx512bw avx512vl xsaveopt xsavec xgetbv1 xsavec cmqm_llc cmqm_occup_llc cmqm_mbb_total
cmq_mbb_local split_lock_detect wbnoinvd dtherm ida pln pts hwp epp avx512vbmi
umip pku ospke avx512_vbmi2 gfnl vaes vpclmulqdq avx512_vnni avx512_bitalg tme
avx512_vpopcntdq la57 rdpid md_clear pconfig flush_l1d arch_capabilities

/proc/cpuinfo cache data

    cache size : 43008 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 24 25 26 27
    node 0 size: 246678 MB
    node 0 free: 256426 MB
    node 1 cpus: 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52
    node 1 size: 246458 MB
    node 1 free: 257372 MB
    node distances:
    node 0 1
    0: 10 20
    1: 20 10

From /proc/meminfo
MemTotal: 528008988 KB

(Continued on next page)
Lenovo Global Technology
ThinkSystem SD630 V2
(2.00 GHz, Intel Xeon Gold 6330)

SPECSpeed®2017_fp_base = 181
SPECSspeed®2017_fp_peak = Not Run

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

Platform Notes (Continued)

HugePages_Total: 0
Hugepagesize: 2048 kB
/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 sanitation
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 May 12 06:34

SPEC is set to: /home/cpu2017-1.1.5-ic2021.1-revB
    Filesystem Type Size Used Avail Use% Mounted on
    /dev/sda4 xfs 372G 39G 333G 11% /home

(Continued on next page)
Lenovo Global Technology  
ThinkSystem SD630 V2  
(2.00 GHz, Intel Xeon Gold 6330)  

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</table>

### Platform Notes (Continued)

From /sys/devices/virtual/dmi/id

- **Vendor:** Lenovo
- **Product:** ThinkSystem SD630 V2
- **Product Family:** ThinkSystem
- **Serial:** 1234567890

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.

- **Memory:**
  - 16x Samsung M393A4K40DB3-CWE 32 GB 2 rank 3200, configured at 2933

### BIOS:

- **BIOS Vendor:** Lenovo
- **BIOS Version:** U8E109PT1-1.01
- **BIOS Date:** 04/28/2021
- **BIOS Revision:** 1.1
- **Firmware Revision:** 1.40

(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.
-------------    |------------------------------------------
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.
-------------    |------------------------------------------
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.
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```

(Continued on next page)
## Lenovo Global Technology

**ThinkSystem SD630 V2**  
(2.00 GHz, Intel Xeon Gold 6330)

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<thead>
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<th>SPECspeed®2017_fp_base</th>
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<tr>
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**CPU2017 License:** 9017  
**Test Sponsor:** Lenovo Global Technology

**Tested by:** Lenovo Global Technology

**Test Date:** May-2021  
**Hardware Availability:** Jul-2021  
**Software Availability:** Feb-2021

### Compiler Version Notes (Continued)

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<td>Copyright (C) 1985-2020 Intel Corporation. All rights reserved.</td>
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<tr>
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<td></td>
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</tbody>
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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`

(Continued on next page)
Lenovo Global Technology
ThinkSystem SD630 V2
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SPECspeed®2017_fp_base = 181
SPECspeed®2017_fp_peak = Not Run

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

Base Portability Flags (Continued)
644.nab_s: -DSPEC_LP64
649.fotonik3d_s: -DSPEC_LP64
654.roms_s: -DSPEC_LP64

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-D.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-D.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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