# SPEC CPU®2017 Integer Speed Result

## Lenovo Global Technology

**ThinkSystem SD630 V2**  
(2.80 GHz, Intel Xeon Gold 6342)

<table>
<thead>
<tr>
<th><strong>SPECSpeed®2017_int_base</strong></th>
<th>11.8</th>
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<tbody>
<tr>
<td><strong>SPECSpeed®2017_int_peak</strong></td>
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<tr>
<th><strong>CPU2017 License:</strong></th>
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<tr>
<td><strong>Test Sponsor:</strong></td>
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<td><strong>Tested by:</strong></td>
<td>Lenovo Global Technology</td>
</tr>
<tr>
<td><strong>Test Date:</strong></td>
<td>Jun-2021</td>
</tr>
<tr>
<td><strong>Hardware Availability:</strong></td>
<td>Jul-2021</td>
</tr>
<tr>
<td><strong>Software Availability:</strong></td>
<td>Dec-2020</td>
</tr>
</tbody>
</table>

### Threads

<table>
<thead>
<tr>
<th>Benchmark</th>
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<tr>
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</tr>
<tr>
<td>625.x264_s</td>
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</tr>
<tr>
<td>631.deepsjeng_s</td>
<td>96</td>
</tr>
<tr>
<td>641.leela_s</td>
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### Software

- **OS:** Red Hat Enterprise Linux 8.3  
  (Ootpa)  
  Kernel 4.18.0-240.el8.x86_64
- **Compiler:** 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;
- **Parallel:** Yes
- **Firmware:** Lenovo BIOS Version U8E111A 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

### Hardware

- **CPU Name:** Intel Xeon Gold 6342
- **Max MHz:** 3500
- **Nominal:** 2800
- **Enabled:** 48 cores, 2 chips, 2 threads/core
- **Orderable:** 2 chips
- **Cache L1:** 32 KB I + 48 KB D on chip per core
- **Cache L2:** 1.25 MB I+D on chip per core
- **Cache L3:** 36 MB I+D on chip per chip
- **Other:** None
- **Memory:** 512 GB (16 x 32 GB 2Rx4 PC4-3200AA-R)
- **Storage:** 1 x 480 GB SATA SSD
- **Other:** None
Lenovo Global Technology
ThinkSystem SD630 V2
(2.80 GHz, Intel Xeon Gold 6342)

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

Results Table

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Threads</th>
<th>Base Seconds</th>
<th>Base Ratio</th>
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<th>Base Seconds</th>
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<tr>
<td>600.perlbench_s</td>
<td>96</td>
<td>250</td>
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<td>144</td>
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<td>623.xalancbmk_s</td>
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<td>13.5</td>
<td>104</td>
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<tr>
<td>625.x264_s</td>
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<td>103</td>
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<td>103</td>
<td>17.2</td>
<td></td>
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<td>246</td>
<td>5.83</td>
<td>245</td>
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<tr>
<td>641.leela_s</td>
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<tr>
<td>648.exchange2_s</td>
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<td>20.2</td>
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<tr>
<td>657.xz_s</td>
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<td>24.0</td>
<td>259</td>
<td>23.9</td>
<td>259</td>
<td>23.9</td>
<td></td>
<td></td>
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SPECspeed®2017_int_base = 11.8
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/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)
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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
C-States set to Autonomous
CPU P-state Control set to Autonomous

Sysinfo program /home/cpu2017-1.1.8-ic2021.1-revB/bin/sysinfo
Rev: r6622 of 2021-04-07 982a61ec0915b55891ef0e16acaf64d
running on localhost.localdomain Mon Jun 21 10:22:23 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 6342 CPU @ 2.80GHz
    2  "physical id"s (chips)
    96 "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 : 48
    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): 96
  On-line CPU(s) list: 0-95
  Thread(s) per core: 2
  Core(s) per socket: 24
  Socket(s): 2
  NUMA node(s): 2
  Vendor ID: GenuineIntel
  CPU family: 6
  Model: 106
  Model name: Intel(R) Xeon(R) Gold 6342 CPU @ 2.80GHz
  Stepping: 6
  CPU MHz: 800.000
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Test Sponsor: Lenovo Global Technology

Test Date: Jun-2021

Hardware Availability: Jul-2021

Tested by: Lenovo Global Technology

Software Availability: Dec-2020

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### Platform Notes (Continued)

BogoMIPS: 5600.00

Virtualization: VT-x

L1d cache: 48K

L1i cache: 32K

L2 cache: 1280K

L3 cache: 36864K

NUMA node0 CPU(s): 0-23, 48-71

NUMA node1 CPU(s): 24-47, 72-95

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 arch_perfmon pebs bts rep_good nopl xtopology nonstop_tsc cpuid

erpmicrofn pni pclmulqdq dtes64 monitor ds cpl vmx 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 3nowprefetch cpuid_fault epb cat_13 invpcid_single

intel_pinn ssbd mba ibrs libp sbip ibrs_enhanced tpr_shadow vmni flexpriority ept

vpid ept_ad fsgsbase tsc_adjust bmi1 hle avx2 smep bmi2 3ms invpcid cqm rdt_a

avx512f avx512dq rdseed adx smap avx512ifma clflushopt clwb intel_pt avx512cd sha ni

avx512bw avx512vl xsaveopt xsave cvsexcl xsavevc qcm_llc qcm_mm threaten qcm_mbb_total

qcm_mbb_local split_lock detect wbnoinvd dtherm ida arat pln pts hwp epp avx512v bmi

umip pku ospe avx512_vbmi2 gfn i vaes vpcrlmulqdq avx512_vnli avx512 bitalg tme

avx512_vpopcntdq la57 rdpid md clear pconfig flush_lld arch capabilities

From numactl --hardware

| Available | 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 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 |

| Available | Node 0 size: 241840 MB |

| Available | Node 0 free: 256290 MB |

| Available | 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 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 |

| Available | Node 1 size: 244008 MB |

| Available | Node 1 free: 257305 MB |

From /proc/meminfo

| MemTotal: | 528000648 kB |
| HugePages_Total: | 0 |
| Hugepagesize: | 2048 kB |

From /sbin/tuned-adm active

---

(Continued on next page)
Platform Notes (Continued)

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): Mitigation: Speculative Store Bypass disabled via prctl and seccomp
CVE-2018-3639 (Speculative Store Bypass): Mitigation: usercopy/swapgs barriers and __user pointer sanitation
CVE-2017-5753 (Spectre variant 1): Mitigation: Enhanced IBRS, IBPB: conditional, RSB filling
CVE-2017-5715 (Spectre variant 2):
CVE-2020-0543 (Special Register Buffer Data Sampling): Not affected
CVE-2019-11135 (TSX Asynchronous Abort): Not affected

run-level 3 Jun 21 10:21

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

Filesystem Type Size Used Avail Use% Mounted on
/dev/sda4 xfs 372G 73G 300G 20% /home

From /sys/devices/virtual/dmi/id
Vendor: Lenovo
Product: ThinkSystem SD630 V2
Product Family: ThinkSystem

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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:
16x Samsung M393A4K40DB3-CWE 32 GB 2 rank 3200

BIOS:
  BIOS Vendor: Lenovo
  BIOS Version: U8E111A-1.02
  BIOS Date: 05/07/2021
  BIOS Revision: 1.2
  Firmware Revision: 1.40

(End of data from sysinfo program)

Compiler Version Notes

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

-------------------------------------------------------------------------------
C++     | 620.omnetpp_s(base) 623.xalancbmk_s(base) 631.deepsjeng_s(base)
         | 641.leela_s(base)
-------------------------------------------------------------------------------
Intel(R) oneAPI DPC++/C++ Compiler for applications running on Intel(R) 64,
  Version 2021.1 Build 20201113
Copyright (C) 1985-2020 Intel Corporation. All rights reserved.
-------------------------------------------------------------------------------

-------------------------------------------------------------------------------
Fortran | 648.exchange2_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.
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Base Compiler Invocation

C benchmarks:
icx

C++ benchmarks:
icpx

Fortran benchmarks:
ifort

Base Portability Flags

600.perlbench_s: -DSPEC_LP64 -DSPEC_LINUX_X64
602.gcc_s: -DSPEC_LP64
605.mcf_s: -DSPEC_LP64
620.omnetpp_s: -DSPEC_LP64
623.xalancbmk_s: -DSPEC_LP64 -DSPEC_LINUX
625.x264_s: -DSPEC_LP64
631.deepsjeng_s: -DSPEC_LP64
641.leela_s: -DSPEC_LP64
648.exchange2_s: -DSPEC_LP64
657.xz_s: -DSPEC_LP64

Base Optimization Flags

C benchmarks:
-DSPEC_OPENMP -std=c11 -m64 -fopenmp -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
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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:

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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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