## Lenovo Global Technology

### SPEC CPU 2017 Integer Speed Result

**Lenovo Global Technology**  
ThinkSystem SR570  
(3.30 GHz, Intel Xeon Gold 6234)  

**SPECspeed®2017_int_base = 10.3**  
**SPECspeed®2017_int_peak = Not Run**

<table>
<thead>
<tr>
<th>Threads</th>
<th>SPECspeed®2017_int_base (10.3)</th>
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<td>21</td>
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<tr>
<td>22</td>
<td>23</td>
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</table>

### Hardware

- **CPU Name**: Intel Xeon Gold 6234  
- **Max MHz**: 4000  
- **Nominal**: 3300  
- **Enabled**: 16 cores, 2 chips, 2 threads/core  
- **Orderable**: 1,2 chips  
- **Cache L1**: 32 KB I + 32 KB D on chip per core  
- **L2**: 1 MB I+D on chip per core  
- **L3**: 24.75 MB I+D on chip per chip  
- **Other**: None  
- **Memory**: 192 GB (12 x 16 GB 2Rx8 PC4-2933Y-R)  
- **Storage**: 1 x 960 GB SATA SSD  
- **Other**: None

### Software

- **OS**: SUSE Linux Enterprise Server 12 SP4 (x86_64)  
  Kernel 4.12.14-94.41-default  
- **Compiler**: C/C++: Version 19.0.4.227 of Intel  
  C/C++ Compiler for Linux;  
- **Firmware**: Lenovo BIOS Version TEE142E 2.30 released Aug-2019 tested as TEE141E 2.30 Jul-2019

### Test Information

- **CPU2017 License**: 9017  
- **Test Sponsor**: Lenovo Global Technology  
- **Tested by**: Lenovo Global Technology  
- **Test Date**: Sep-2019  
- **Hardware Availability**: Jul-2019  
- **Software Availability**: May-2019

### Performance Results

- 600.perlbench_s  
- 602.gcc_s  
- 605.mcf_s  
- 620.omnetpp_s  
- 623.xalancbmk_s  
- 625.x264_s  
- 631.deepsjeng_s  
- 641.leela_s  
- 648.exchange2_s  
- 657.xz_s
Lenovo Global Technology
ThinkSystem SR570
(3.30 GHz, Intel Xeon Gold 6234)

SPECspeed®2017_int_base = 10.3
SPECTCpu®2017_int_peak = Not Run

Results Table

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Threads</th>
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<th>Ratio</th>
<th>Seconds</th>
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<th>Seconds</th>
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<th>Threads</th>
<th>Seconds</th>
<th>Ratio</th>
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<tbody>
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<tr>
<td>648.exchange2_s</td>
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<td>22.5</td>
<td></td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>

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"

General Notes

Environment variables set by runcpu before the start of the run:
KMP_AFFINITY = "granularity=fine,scatter"
LD_LIBRARY_PATH = "/home/cpu2017-1.0.5-ic19.0u4/lib/intel64"
LD_LIBRARY_PATH = "$LD_LIBRARY_PATH:/home/cpu2017-1.0.5-ic19.0u4/je5.0.1-64"
OMP_STACKSIZE = "192M"

Binaries compiled on a system with 1x Intel Core i9-799X CPU + 32GB RAM
memory using Redhat Enterprise Linux 7.5
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.
Yes: The test sponsor attests, as of date of publication, that CVE-2018-3640 (Spectre variant 3a) is mitigated in the system as tested and documented.
Yes: The test sponsor attests, as of date of publication, that CVE-2018-3639 (Spectre variant 4) is mitigated in the system as tested and documented.
jemalloc, a general purpose malloc implementation built with the RedHat Enterprise 7.5, and the system compiler gcc 4.8.5

(Continued on next page)
**Lenovo Global Technology**

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<tr>
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<th>10.3</th>
</tr>
</thead>
<tbody>
<tr>
<td>SPECspeed®2017_int_peak =</td>
<td>Not Run</td>
</tr>
</tbody>
</table>

**CPU2017 License:** 9017  
**Test Date:** Sep-2019

**Test Sponsor:** Lenovo Global Technology  
**Hardware Availability:** Jul-2019  
**Tested by:** Lenovo Global Technology  
**Software Availability:** May-2019

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**General Notes (Continued)**


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**Platform Notes**

- BIOS configuration:
  - Choose Operating Mode set to Maximum Performance
  - Choose Operating Mode set to Custom Mode
  - Memory Power Management set to Automatic
  - CPU P-state Control set to Cooperative
  - MONITOR/MWAIT set to Enable

- Sysinfo program `/home/cpu2017-1.0.5-ic19.0u4/bin/sysinfo`  
  Rev: r5974 of 2018-05-19 9bcde8f2999c333d61f64985e45859ea9  
  running on linux-dl3d Thu Sep 12 15:56:09 2019

- 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 6234 CPU @ 3.30GHz
  - 2 "physical id"s (chips)
  - 32 "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: 8
  - siblings: 16
  - physical 0: cores 2 3 9 11 17 20 24 27
  - physical 1: cores 2 3 16 18 20 24 25 27

  From lscpu:
  
  - Architecture: x86_64
  - CPU op-mode(s): 32-bit, 64-bit
  - Byte Order: Little Endian
  - CPU(s): 32
  - On-line CPU(s) list: 0-31
  - Thread(s) per core: 2
  - Core(s) per socket: 8
  - Socket(s): 2
  - NUMA node(s): 2
  - Vendor ID: GenuineIntel
  - CPU family: 6
  - Model: 85
  - Model name: Intel(R) Xeon(R) Gold 6234 CPU @ 3.30GHz
  - Stepping: 7
  - CPU MHz: 3300.000
  - CPU max MHz: 4000.000

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

Lenovo Global Technology
ThinkSystem SR570
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Test Sponsor: Lenovo Global Technology
Test Date: Sep-2019
Tested by: Lenovo Global Technology
Hardware Availability: Jul-2019
Software Availability: May-2019

SPECspeed®2017_int_base = 10.3
SPECspeed®2017_int_peak = Not Run

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Platform Notes (Continued)

CPU min MHz: 1200.0000
BogoMIPS: 6600.00
Virtualization: VT-x
L1d cache: 32K
L1i cache: 32K
L2 cache: 1024K
L3 cache: 25344K
NUMA node0 CPU(s): 0-7,16-23
NUMA node1 CPU(s): 8-15,24-31

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
aperfmpref pni pclmulqdq dtes64 monitor ds_cpl vmx smx est tm2 ssse3 sdbg fma cx16
xtpm 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 cdp_l3
invpcid_single intel_pipn ssbd mba ibrs ibpb stibp tpr_shadow vnmi flexpriority ept
vpid fsgsbase tsc_adjust bmi1 hle avx2 smep bmi2 erylms invpcid rtm cqm mpx rdt_a
avx512f avx512dq rdseed adx smap clflushopt clwb intel_pt avx512cd avx512bw avx512vl
xsaveopt xsavec xgetbv1 xsaves cqm_llc cqm_occup_llc cqm_mutl_local cqm_mbm_local
dtherm ida arat pln pts hwp hwp_act_window hwp_epp hwp_pkg_req pkg ospke avx512_vnni
flush_lid arch_capabilities

/proc/cpuinfo cache data
  cache size : 25344 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 16 17 18 19 20 21 22 23
    node 0 size: 96059 MB
    node 0 free: 95590 MB
    node 1 cpus: 8 9 10 11 12 13 14 15 24 25 26 27 28 29 30 31
    node 1 size: 96712 MB
    node 1 free: 96168 MB
    node distances:
      node  0  1
          0:  10  21
          1:  21  10

From /proc/meminfo
  MemTotal: 197398660 kB
  HugePages_Total: 0
  Hugepagesize: 2048 kB

From /etc/*release* /etc/*version*
  SuSE-release:
    SUSE Linux Enterprise Server 12 (x86_64)

(Continued on next page)
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CPU2017 License: 9017
Test Sponsor: Lenovo Global Technology
Tested by: Lenovo Global Technology

Platform Notes (Continued)

VERSION = 12
PATCHLEVEL = 4
# This file is deprecated and will be removed in a future service pack or release.
# Please check /etc/os-release for details about this release.

os-release:
NAME="SLES"
VERSION="12-SP4"
VERSION_ID="12.4"
PRETTY_NAME="SUSE Linux Enterprise Server 12 SP4"
ID="sles"
ANSI_COLOR="0;32"
CPE_NAME="cpe:/o:suse:sles:12:sp4"

uname −a:
x86_64 x86_64 x86_64 GNU/Linux

Kernel self-reported vulnerability status:
CVE-2017-5754 (Meltdown): Not affected
CVE-2017-5753 (Spectre variant 1): Mitigation: __user pointer sanitization
CVE-2017-5715 (Spectre variant 2): Mitigation: Indirect Branch Restricted Speculation, IBPB, IBRS_FW

run-level 3 Sep 12 15:52

SPEC is set to: /home/cpu2017-1.0.5-ic19.0u4
Filesystem Type Size Used Avail Use% Mounted on
/dev/sda3 xfs 892G 43G 850G 5% /

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.

BIOS Lenovo -[TEE141E-2.30]- 07/02/2019
Memory:
4x NO DIMM NO DIMM
12x SK Hynix HMA82GR7CJR8N-WM 16 GB 2 rank 2933

(End of data from sysinfo program)

Compiler Version Notes

600.perlbench_s(base) 602.gcc_s(base) 605.mcf_s(base)
625.x264_s(base) 657.xz_s(base)

(Continued on next page)
**LENNOVO GLOBAL TECHNOLOGY**

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**SPECs**

**SPEC**

**SPEC CPU**

**2017 Integer Speed Result**

**Copyright 2017-2019 Standard Performance Evaluation Corporation**

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**Compiler Version Notes (Continued)**

Intel(R) C Intel(R) 64 Compiler for applications running on Intel(R) 64, Version 19.0.4.227 Build 20190416
Copyright (C) 1985-2019 Intel Corporation. All rights reserved.

==============================================================================
C++ | 620.omnetpp_s(base) 623.xalancbmk_s(base) 631.deepsjeng_s(base) 641.leela_s(base)
==============================================================================

Intel(R) C++ Intel(R) 64 Compiler for applications running on Intel(R) 64, Version 19.0.4.227 Build 20190416
Copyright (C) 1985-2019 Intel Corporation. All rights reserved.

==============================================================================
Fortran | 648.exchange2_s(base)
==============================================================================

Intel(R) Fortran Intel(R) 64 Compiler for applications running on Intel(R) 64, Version 19.0.4.227 Build 20190416
Copyright (C) 1985-2019 Intel Corporation. All rights reserved.

**Base Compiler Invocation**

C benchmarks:
icc -m64 -std=c11

C++ benchmarks:
icpc -m64

Fortran benchmarks:
ifort -m64

**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
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