Lenovo Global Technology
ThinkSystem SR630
(2.60 GHz, Intel Xeon Gold 6240M)

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

**Threads**

<table>
<thead>
<tr>
<th>Thread</th>
<th>Name</th>
<th>Value</th>
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</thead>
<tbody>
<tr>
<td>603.bwaves_s</td>
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<tr>
<td>607.cactuBSSN_s</td>
<td>36</td>
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<tr>
<td>619.lbm_s</td>
<td>36</td>
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<tr>
<td>621.wrf_s</td>
<td>36</td>
<td>129</td>
</tr>
<tr>
<td>627.cam4_s</td>
<td>36</td>
<td>90.1</td>
</tr>
<tr>
<td>628.pop2_s</td>
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<td>644.nab_s</td>
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<td>230</td>
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<td>649.fotonik3d_s</td>
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<td>85.3</td>
</tr>
<tr>
<td>654.roms_s</td>
<td>36</td>
<td>119</td>
</tr>
</tbody>
</table>

**SPECspeed®2017_fp_base** = 132
**SPECspeed®2017_fp_peak** = Not Run

**Hardware**

- **CPU Name**: Intel Xeon Gold 6240M
- **Max MHz**: 3900
- **Nominal**: 2600
- **Enabled**: 36 cores, 2 chips
- **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**: 384 GB (24 x 16 GB 2Rx8 PC4-2933Y-R)
- **Storage**: 1 x 800 GB SATA SSD

**Software**

- **OS**: Red Hat Enterprise Linux Server release 7.6 (Maipo)
- **Kernel**: 3.10.0-957.el7.x86_64
- **Compiler**: C/C++: Version 19.0.0.117 of Intel C/C++
- **Compiler for Linux**: Compiler for Linux
- **Parallel**: Yes
- **File System**: xfs
- **System State**: Run level 3 (multi-user)
- **Base Pointers**: 64-bit
- **Peak Pointers**: Not Applicable
- **Other**: None
- **Power Management**: --
# SPEC CPU®2017 Floating Point Speed Result

**Lenovo Global Technology**  
ThinkSystem SR630  
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---

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**Tested by:** Lenovo Global Technology  
**Test Date:** Aug-2019  
**Hardware Availability:** Jul-2019  
**Software Availability:** Oct-2018

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## Results Table

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</tbody>
</table>

## 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,compact"
- **LD_LIBRARY_PATH** = "/home/cpu2017-1.0.5-ic19/lib/intel64"
- **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.
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Platform Notes

BIOS configuration:
Choose Operating Mode set to Maximum Performance
Choose Operating Mode set to Custom Mode
C-states set to Legacy
Hyper-Threading set to Disable
Adjacent Cache Prefetch set to Disable
Stale AtoS set to Enable
Sysinfo program /home/cpu2017-1.0.5-ic19/bin/sysinfo
Rev: r5974 of 2018-05-19 9bcede8f2999c33d61f64985e45859ea9
running on localhost.localdomain Sat Aug 10 18:26:30 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 6240M CPU @ 2.60GHz
  2  "physical id"s (chips)
  36 "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 : 18
    siblings : 18
    physical 0: cores 0 1 2 3 4 8 9 10 11 16 17 18 19 20 24 25 26 27
    physical 1: cores 0 1 2 3 4 8 9 10 11 16 17 18 19 20 24 25 26 27

From lscpu:

  Architecture:          x86_64
  CPU op-mode(s):        32-bit, 64-bit
  Byte Order:            Little Endian
  CPU(s):                36
  On-line CPU(s) list:   0-35
  Thread(s) per core:    1
  Core(s) per socket:    18
  Socket(s):             2
  NUMA node(s):          2
  Vendor ID:             GenuineIntel
  CPU family:            6
  Model:                 85
  Model name:            Intel(R) Xeon(R) Gold 6240M CPU @ 2.60GHz
  Stepping:              7
  CPU MHz:               2600.000
  BogoMIPS:              5200.00
  Virtualization:        VT-x
  L1d cache:             32K
  L1i cache:             32K
  L2 cache:              1024K

(Continued on next page)
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Hardware Availability: Jul-2019
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Platform Notes (Continued)

L3 cache: 25344K
NUMA node0 CPU(s): 0-17
NUMA node1 CPU(s): 18-35
Flags: fpu vme de pse tsc msr pae mce cx8 apic sep mtrr pge mca cmov
pat pse36 clflush dts acpica psep mce cmov pat pse36 clflush dtsc
lm constant_tsc art arch_perfmon pebs bts rep_good nopl xtopology nonstop_tsc
aperfmpref eagerfpu pni pclmulqdq dtes64 monitor ds_cpl vmx smx est tm2 ssse3 sdbg
fma cx16 xprmd pdcmd pcd dca sse4_1 sse4_2 x2apic movbe popcnt tsc_deadline_timer tsc
xsarch avx f16c rdrand lahf_l1m abm 3nowprefetch epb cat _13 cdp _13 intel _pinn
intel _pt sabs mbp ibrs ibpb stibp ibrs _enhanced tpr_shadow vnm _flex _priority _ept
vpid fsqgsbase tsc _adjust bm1 lhe avx2 smep bm12 erms invpcid rtm cqm mpx rdt _a
avx512f avx512dq rdseed adx smap clflushopt clwb avx512cd avx512bw avx512vl xsaveopt
xsavec xgetbv1 cqm llc cqm _occup llc cqm _mbm _total cqm _mbm _local dtherm ida arat pln
pts pkp ospke avx512_vnni spec _ctrl intel _stibp flush _ll1d 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 8 9 10 11 12 13 14 15 16 17
  node 0 size: 196280 MB
  node 0 free: 190682 MB
  node 1 cpus: 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35
  node 1 size: 196608 MB
  node 1 free: 191640 MB
  node distances:
    node 0 1
    0: 10 21
    1: 21 10

From /proc/meminfo
  MemTotal: 395878452 kB
  HugePages_Total: 0
  Hugepagesize: 2048 kB

From /etc/*release* /etc/*version*
  os-release:
    NAME="Red Hat Enterprise Linux Server"
    VERSION="7.6 (Maipo)"
    ID=rhel
    ID_LIKE="fedora"
    VARIANT="Server"
    VARIANT_ID="server"
    VERSION_ID="7.6"
    PRETTY_NAME="Red Hat Enterprise Linux Server 7.6 (Maipo)"

(Continued on next page)
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**SPECSPEED®2017 fp_base = 132**
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**Platform Notes (Continued)**

```
redhat-release: Red Hat Enterprise Linux Server release 7.6 (Maipo)
system-release: Red Hat Enterprise Linux Server release 7.6 (Maipo)
```

```
uname -a:
    Linux localhost.localdomain 3.10.0-957.el7.x86_64 #1 SMP Thu Oct 4 20:48:51 UTC 2018
    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: Load fences, __user pointer sanitization
- CVE-2017-5715 (Spectre variant 2): Mitigation: Enhanced IBRS

```
runtime 3 Aug 10 17:24
```

```
SPEC is set to: /home/cpu2017-1.0.5-ic19
```

```
Filesystem     Type  Size  Used Avail Use% Mounted on
/dev/sdb2      xfs   689G   43G  647G   7% /home
```

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 -[IVE141E-2.30]- 07/02/2019
Memory:
    24x Samsung M393A2K43CB2-CVF 16 GB 2 rank 2933
```

(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 for applications running on Intel(R) 64,
    Version 19.0.0.117 Build 20180804
Copyright (C) 1985-2018 Intel Corporation. All rights reserved.
------------------------------------------------------------------------------

C++, C, Fortran | 607.cactuBSSN_s(base)
```

```
Intel(R) C++ Intel(R) 64 Compiler for applications running on Intel(R) 64,
    Version 19.0.0.117 Build 20180804
Copyright (C) 1985-2018 Intel Corporation. All rights reserved.
```

(Continued on next page)
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Compiler Version Notes (Continued)

Intel(R) C Intel(R) 64 Compiler for applications running on Intel(R) 64,
Version 19.0.0.117 Build 20180804
Copyright (C) 1985-2018 Intel Corporation. All rights reserved.

Intel(R) Fortran Intel(R) 64 Compiler for applications running on Intel(R)
64, Version 19.0.0.117 Build 20180804
Copyright (C) 1985-2018 Intel Corporation. All rights reserved.

Base Compiler Invocation

C benchmarks:
icc -m64 -std=c11

Fortran benchmarks:
ifort -m64

Benchmarks using both Fortran and C:
ifort -m64 icc -m64 -std=c11

Benchmarks using Fortran, C, and C++:
icpc -m64 icc -m64 -std=c11 ifort -m64
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Base Portability Flags

603.bwaves_s: -DSPEC_LP64
607.cactuBSSN_s: -DSPEC_LP64
619.hm_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

Base Optimization Flags

C benchmarks:
-xCORE-AVX512 -ipo -O3 -no-prec-div -qopt-prefetch
-ffinite-math-only -qopt-mem-layout-trans=3 -qopenmp -DSPEC_OPENMP

Fortran benchmarks:
-DSPEC_OPENMP -xCORE-AVX512 -ipo -O3 -no-prec-div -qopt-prefetch
-ffinite-math-only -qopt-mem-layout-trans=3 -qopenmp

Benchmarks using both Fortran and C:
-xCORE-AVX512 -ipo -O3 -no-prec-div -qopt-prefetch
-ffinite-math-only -qopt-mem-layout-trans=3 -qopenmp -DSPEC_OPENMP

Benchmarks using Fortran, C, and C++:
-xCORE-AVX512 -ipo -O3 -no-prec-div -qopt-prefetch
-ffinite-math-only -qopt-mem-layout-trans=3 -qopenmp -DSPEC_OPENMP

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-CLX-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-CLX-D.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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