# SPEC® CPU2017 Floating Point Speed Result

## Lenovo Global Technology

ThinkSystem SR150  
(3.30 GHz, Intel Xeon E-2126G)

<table>
<thead>
<tr>
<th>SPECspeed2017_fp_base</th>
<th>28.9</th>
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<tbody>
<tr>
<td>SPECspeed2017_fp_peak</td>
<td>Not Run</td>
</tr>
</tbody>
</table>

**CPU2017 License:** 9017  
**Test Date:** Nov-2018  
**Test Sponsor:** Lenovo Global Technology  
**Hardware Availability:** Jan-2019  
**Tested by:** Lenovo Global Technology  
**Software Availability:** May-2018

### Threads

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Threads</th>
</tr>
</thead>
<tbody>
<tr>
<td>603.bwaves_s</td>
<td>6</td>
</tr>
<tr>
<td>607.cactuBSSN_s</td>
<td>6</td>
</tr>
<tr>
<td>619.lbm_s</td>
<td>6</td>
</tr>
<tr>
<td>621.wrf_s</td>
<td>6</td>
</tr>
<tr>
<td>627.cam4_s</td>
<td>6</td>
</tr>
<tr>
<td>628.pop2_s</td>
<td>6</td>
</tr>
<tr>
<td>638.imagick_s</td>
<td>6</td>
</tr>
<tr>
<td>644.nab_s</td>
<td>6</td>
</tr>
<tr>
<td>649.fotonik3d_s</td>
<td>6</td>
</tr>
<tr>
<td>654.roms_s</td>
<td>6</td>
</tr>
</tbody>
</table>

### Hardware

**CPU Name:** Intel Xeon E-2126G  
**Max MHz.:** 4500  
**Nominal:** 3300  
**Enabled:** 6 cores, 1 chip  
**Orderable:** 1 chip  
**Cache L1:** 32 KB I + 32 KB D on chip per core  
**L2:** 256 KB I+D on chip per core  
**L3:** 12 MB I+D on chip per chip  
**Memory:** 64 GB (4 x 16 GB 2Rx8 PC4-2666V-E)  
**Storage:** 1 x 480 GB SATA SSD

### Software

**OS:** SUSE Linux Enterprise Server 12 SP3 (x86_64)  
**Kernel:** 4.4.131-94.29-default  
**Compiler:** C/C++: Version 18.0.2.199 of Intel C/C++  
**Fortran:** Version 18.0.2.199 of Intel Fortran  
**Compiler for Linux:**  
**Parallel:** Yes  
**Firmware:** Lenovo BIOS Version ISE105G 1.01 released Oct-2018  
**System State:** Run level 3 (multi-user)  
**File System:** btrfs  
**Base Pointers:** 64-bit  
**Peak Pointers:** Not Applicable  
**jemalloc memory allocator V5.0.1**
Lenovo Global Technology
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CPU2017 License: 9017
Test Sponsor: Lenovo Global Technology
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Results Table

<table>
<thead>
<tr>
<th>Benchmark</th>
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</tr>
</tbody>
</table>

SPECspeed2017_fp_base = 28.9
SPECspeed2017_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"

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-ic18.0u2/lib/ia32:/home/cpu2017-1.0.5-ic18.0u2/lib/intel64"
LD_LIBRARY_PATH = "$LD_LIBRARY_PATH:/home/cpu2017-1.0.5-ic18.0u2/je5.0.1-32:/home/cpu2017-1.0.5-ic18.0u2/je5.0.1-64"
OMP_STACKSIZE = "192M"

Binaries compiled on a system with 1x Intel Core i7-6700K 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

Yes: 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.
jemalloc, a general purpose malloc implementation
built with the RedHat Enterprise 7.5, and the system compiler gcc 4.8.5
Lenovo Global Technology
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Tested by: Lenovo Global Technology

Platform Notes

BIOS configuration:
Choose Operating Mode set to Maximum Performance
Execute Disable Bit set to Disable
DCA set to Enable
Sysinfo program /home/cpu2017-1.0.5-ic18.0u2/bin/sysinfo
Rev: r5974 of 2018-05-19 9bcd8f2999c33d61f64985e45859ea9
running on linux-tnsi Thu Nov 22 19:58:10 2018

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) E-2126G CPU @ 3.30GHz
  1 "physical id"s (chips)
  6 "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: 6
siblings: 6
physical 0: cores 0 1 2 3 4 5

From lscpu:
Architecture: x86_64
CPU op-mode(s): 32-bit, 64-bit
Byte Order: Little Endian
CPU(s): 6
On-line CPU(s) list: 0-5
Thread(s) per core: 1
Core(s) per socket: 6
Socket(s): 1
NUMA node(s): 1
Vendor ID: GenuineIntel
CPU family: 6
Model: 158
Model name: Intel(R) Xeon(R) E-2126G CPU @ 3.30GHz
Stepping: 10
CPU MHz: 4389.788
CPU max MHz: 4500.0000
CPU min MHz: 800.0000
BogoMIPS: 6623.97
Virtualization: VT-x
L1d cache: 32K
L1i cache: 32K
L2 cache: 256K
L3 cache: 12288K
NUMA node0 CPU(s): 0-5

(Continued on next page)
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9017

### Test Date:
Nov-2018

### Test Sponsor:
Lenovo Global Technology

### Hardware Availability:
Jan-2019

### Tested by:
Lenovo Global Technology

### Software Availability:
May-2018

### Platform Notes (Continued)

**Flags:**
- fpu
- vme
- de
- pse
- tsc
- mce
- cx8
- apic
- sep
- mtrr
- pae
- mca
- cmov
- pat
- pse36
- clflush
- dts
- acpi
- mmx
- fxsr
- sse
- sse2
- ss
- ht
- tm
- pbe
- syscall
- nx
- pdpe1gb
- rdtsscp
- lm
- constant_tsc
- art
- arch_perfmon
- pebs
- bts
- rep_good
- nopl
- xtopology
- nonstop_tsc
- aperfmperf
- eagerfpu
- pni
- pclmulqdq
- dtes64
- monitor
- ds_cpl
- vmx
- smx
- est
- tm2
- ssse3
- sdbg
- fma
- cx16
- xtrr
- pdcm
- pcid
- sse4_1
- sse4_2
- x2apic
- movbe
- popcnt
- tsc_deadline_timer
- aes
- xsave
- avx
- f16c
- rdrand
- lahf_lm
- abm
- 3dnowprefetch
- ida
- arat
- epb
- invpcid_single
- pln
- pts
- dtherm
- hwp
- notify
- hwp_act_window
- hwp_epp
- intel_pt
- rsb_ctxsw
- spec_ctrl
- stibp
- ssbd
- retpoline
- kaiser
- tpr_shadow
- vmmi
- flexpriority
- ept
- vpid
- fsgsbase
- tsc_adjust
- bm1
- hle
- avx2
- sme
- bmi2
- erms
- invpcid
- rtm
- mpx
- rdseed
- adx
- smap
- clflushopt
- xsaveopt
- xsavec
- xgetbv1

**/proc/cpuinfo cache data**

- cache size: 12288 KB

**/proc/meminfo**

- MemTotal: 65926172 kB
- HugePages_Total: 0
- Hugepagesize: 2048 kB

**/etc/*release* /etc/*version***

- SuSE-release:
  - SUSE Linux Enterprise Server 12 (x86_64)
  - VERSION = 12
  - PATCHLEVEL = 3

---

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SPEC CPU2017 Floating Point Speed Result

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**Platform Notes (Continued)**

x86_64 x86_64 x86_64 GNU/Linux

Kernel self-reported vulnerability status:

CVE-2017-5754 (Meltdown): Mitigation: PTI
CVE-2017-5753 (Spectre variant 1): Mitigation: __user pointer sanitization
CVE-2017-5715 (Spectre variant 2): Mitigation: IBRS+IBPB

run-level 3 Nov 22 15:23

SPEC is set to: /home/cpu2017-1.0.5-ic18.0u2

Filesystem Type Size Used Avail Use% Mounted on
/dev/md126p2 btrfs 446G 18G 428G 4% /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 SBMIBOS" standard.

BIOS Lenovo -[ISE105G-1.01]- 10/25/2018
Memory:
4x Micron 18ASF2G72AZ-2G6D1 16 GB 2 rank 2666

(End of data from sysinfo program)

**Compiler Version Notes**

-----------------------------------------------------------------------------------------------
CC 619.lbm_s(base) 638.imagick_s(base) 644.nab_s(base)
-----------------------------------------------------------------------------------------------
icc (ICC) 18.0.2 20180210
Copyright (C) 1985-2018 Intel Corporation. All rights reserved.
-----------------------------------------------------------------------------------------------
FC 607.cactuBSSN_s(base)
-----------------------------------------------------------------------------------------------
icpc (ICC) 18.0.2 20180210
Copyright (C) 1985-2018 Intel Corporation. All rights reserved.
icc (ICC) 18.0.2 20180210
Copyright (C) 1985-2018 Intel Corporation. All rights reserved.
ifort (IFORT) 18.0.2 20180210
Copyright (C) 1985-2018 Intel Corporation. All rights reserved.
-----------------------------------------------------------------------------------------------
FC 603.bwaves_s(base) 649.fotonik3d_s(base) 654.roms_s(base)

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Compiler Version Notes (Continued)

ifort (IFORT) 18.0.2 20180210
Copyright (C) 1985-2018 Intel Corporation. All rights reserved.

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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

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
644.nab_s: -DSPEC_LP64
649.fotonik3d_s: -DSPEC_LP64
654.roms_s: -DSPEC_LP64
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### BASE OPTIMIZATION FLAGS

#### C benchmarks:
- `-Wl,-z,muldefs -xCORE-AVX2 -ipo -O3 -no-prec-div -qopt-prefetch`
- `-ffinite-math-only -qopt-mem-layout-trans=3 -qopenmp -DSPEC_OPENMP`
- `-L/usr/local/je5.0.1-64/lib -ljemalloc`

#### Fortran benchmarks:
- `-Wl,-z,muldefs -DSPEC_OPENMP -xCORE-AVX2 -ipo -O3 -no-prec-div`
- `-qopt-prefetch -ffinite-math-only -qopt-mem-layout-trans=3 -qopenmp`
- `-nostandard-realloc-lhs -L/usr/local/je5.0.1-64/lib -ljemalloc`

#### Benchmarks using both Fortran and C:
- `-Wl,-z,muldefs -xCORE-AVX2 -ipo -O3 -no-prec-div -qopt-prefetch`
- `-ffinite-math-only -qopt-mem-layout-trans=3 -qopenmp -DSPEC_OPENMP`
- `-nostandard-realloc-lhs -L/usr/local/je5.0.1-64/lib -ljemalloc`

#### Benchmarks using Fortran, C, and C++:
- `-Wl,-z,muldefs -xCORE-AVX2 -ipo -O3 -no-prec-div -qopt-prefetch`
- `-ffinite-math-only -qopt-mem-layout-trans=3 -qopenmp -DSPEC_OPENMP`
- `-nostandard-realloc-lhs -L/usr/local/je5.0.1-64/lib -ljemalloc`

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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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