**Lenovo Global Technology**  
ThinkSystem SR850  
(2.60 GHz, Intel Xeon Gold 6126)

**SPECspeed2017_fp_base = 127**  
**SPECspeed2017_fp_peak = 127**

### Hardware
- **CPU Name:** Intel Xeon Gold 6126  
- **Max MHz.:** 3700  
- **Nominal:** 2600  
- **Enabled:** 48 cores, 4 chips  
- **Orderable:** 2, 4 chips  
- **Cache L1:** 32 KB I + 32 KB D on chip per core  
- **L2:** 1 MB I+D on chip per core  
- **L3:** 19.25 MB I+D on chip per core  
- **Other:** None  
- **Memory:** 1536 GB (48 x 32 GB 2Rx4 PC4-2666V-R)  
- **Storage:** 1 x 800 GB SAS SSD  
- **Other:** None

### Software
- **OS:** SUSE Linux Enterprise Server 12 SP2 (x86_64)  
- **Kernel:** 4.4.21-69-default  
- **Compiler:** C/C++: Version 18.0.0.128 of Intel C/C++ Compiler for Linux; Fortran: Version 18.0.0.128 of Intel Fortran Compiler for Linux  
- **Parallel:** Yes  
- **Firmware:** Lenovo BIOS Version TEE115E 1.01 released Aug-2017  
- **File System:** xfs  
- **System State:** Run level 3 (multi-user)  
- **Base Pointers:** 64-bit  
- **Peak Pointers:** 64-bit  
- **Other:** None

### Results

<table>
<thead>
<tr>
<th>Test Name</th>
<th>Threads</th>
<th>SPECspeed2017_fp_base</th>
<th>SPECspeed2017_fp_peak</th>
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<tr>
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Lenovo Global Technology
ThinkSystem SR850
(2.60 GHz, Intel Xeon Gold 6126)

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

Results Table

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SPECspeed2017_fp_base = 127
SPECspeed2017_fp_peak = 127

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:
LD_LIBRARY_PATH = "/home/cpu2017.1.0.2.ic18.0/lib/ia32:/home/cpu2017.1.0.2.ic18.0/lib/intel64"
LD_LIBRARY_PATH = "$LD_LIBRARY_PATH:/home/cpu2017.1.0.2.ic18.0/je5.0.1-32:/home/cpu2017.1.0.2.ic18.0/je5.0.1-64"
OMP_STACKSIZE = "192M"

Binaries compiled on a system with 1x Intel Core i7-4790 CPU + 32GB RAM
memory using Redhat Enterprise Linux 7.4
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

No: The test sponsor attests, as of date of publication, that CVE-2017-5754 (Meltdown) is mitigated in the system as tested and documented.
No: 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.
No: 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.

This benchmark result is intended to provide perspective on past performance using the historical hardware and/or software described on this result page.

The system as described on this result page was formerly

(Continued on next page)
## General Notes (Continued)

Generally available. At the time of this publication, it may not be shipping, and/or may not be supported, and/or may fail to meet other tests of General Availability described in the SPEC OSG Policy document, http://www.spec.org/osg/policy.html

This measured result may not be representative of the result that would be measured were this benchmark run with hardware and software available as of the publication date.

## Platform Notes

BIOS configuration:
Choose Operating Mode set to Maximum Performance
Hyper-Threading set to Disable
DCU Streamer Prefetcher set to Disable
MONITORM/WAIT set to Enable
Trusted Execution Technology set to Enable
XPT Prefetcher set to Enable
DCA set to Enable
Stale AtoS set to Enable
Sysinfo program /home/cpu2017.1.0.2.ic18.0/bin/sysinfo
Rev: r5797 of 2017-06-14 96c45e4568ad54c135fd618bcc091c0f

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 6126 CPU @ 2.60GHz
  4  "physical id"s (chips)
  48 "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 : 12
  siblings : 12
  physical 0: cores 0 1 2 4 5 6 8 9 10 11 13 14
  physical 1: cores 0 1 3 4 5 6 8 9 10 11 12 13
  physical 2: cores 0 1 2 4 5 6 8 9 10 11 13 14
  physical 3: cores 0 1 2 4 5 6 8 9 10 11 13 14
```

From lscpu:

```
Architecture:          x86_64
CPU op-mode(s):        32-bit, 64-bit
Byte Order:            Little Endian
CPU(s):                48
```
**SPEC CPU2017 Floating Point Speed Result**

**Lenovo Global Technology**  
ThinkSystem SR850  
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**CPU2017 License**: 9017  
**Test Sponsor**: Lenovo Global Technology  
**Tested by**: Lenovo Global Technology  
**Test Date**: Dec-2017  
**Hardware Availability**: Aug-2017  
**Software Availability**: Sep-2017

**Platform Notes (Continued)**

- **On-line CPU(s) list**: 0-47  
- **Thread(s) per core**: 1  
- **Core(s) per socket**: 12  
- **Socket(s)**: 4  
- **NUMA node(s)**: 4  
- **Vendor ID**: GenuineIntel  
- **CPU family**: 6  
- **Model**: 85  
- **Model name**: Intel(R) Xeon(R) Gold 6126 CPU @ 2.60GHz  
- **Stepping**: 4  
- **CPU MHz**: 2593.910  
- **BogoMIPS**: 5187.82  
- **Virtualization**: VT-x  
- **L1d cache**: 32K  
- **L1i cache**: 32K  
- **L2 cache**: 1024K  
- **L3 cache**: 19712K  
- **NUMA node0 CPU(s)**: 0-11  
- **NUMA node1 CPU(s)**: 12-23  
- **NUMA node2 CPU(s)**: 24-35  
- **NUMA node3 CPU(s)**: 36-47  
- **Flags**: fpu vme de pse mce size 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 aperfmperf eagerfpu pni pclmulqdq dtes64 monitor ds_cpl vmx smx est tm2 ssse3 sdbg fma cx16 xtpr pdcm pclid ds_cpl sse4_1 sse4_2 x2apic movbe popcnt tsc_deadline_timer aes xsave avx f16c rdrand lahf_lm abm 3dnowprefetch ida arat epb pfn pts dtherm intel_pt tpr_shadow vnmi flexpriority ept vpid fsgsbase tsc_adjust bmi1 hle avx2 smep bmi2  
- **/proc/cpuinfo cache data**:  
  - cache size: 19712 KB

From numactl --hardware  
**WARNING**: a numactl 'node' might or might not correspond to a physical chip.  
  - available: 4 nodes (0-3)  
  - node 0 cpus: 0 1 2 3 4 5 6 7 8 9 10 11  
  - node 0 size: 386659 MB  
  - node 0 free: 385413 MB  
  - node 1 cpus: 12 13 14 15 16 17 18 19 20 21 22 23  
  - node 1 size: 387057 MB  
  - node 1 free: 385964 MB  
  - node 2 cpus: 24 25 26 27 28 29 30 31 32 33 34 35  
  - node 2 size: 387057 MB  
  - node 2 free: 386043 MB  
  - node 3 cpus: 36 37 38 39 40 41 42 43 44 45 46 47

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Test Sponsor: Lenovo Global Technology  
Tested by: Lenovo Global Technology  

Test Date: Dec-2017  
Hardware Availability: Aug-2017  
Software Availability: Sep-2017  

Platform Notes (Continued)

node 3 size: 387054 MB  
node 3 free: 385563 MB  
node distances:  
  node 0 1 2 3  
  0: 10 21 21 31  
  1: 21 10 31 21  
  2: 21 31 10 21  
  3: 31 21 21 10  

From /proc/meminfo  
MemTotal: 1584976124 kB  
HugePages_Total: 0  
Hugepagesize: 2048 kB  

From /etc/*release* /etc/*version*  
SuSE-release:  
  SUSE Linux Enterprise Server 12 (x86_64)  
  VERSION = 12  
  PATCHLEVEL = 2  
  # 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-SP2"  
    VERSION_ID="12.2"  
    PRETTY_NAME="SUSE Linux Enterprise Server 12 SP2"  
    ID="sles"  
    ANSI_COLOR="0;32"  
    CPE_NAME="cpe:/o:suse:sles:12:sp2"  

uname -a:  
  Linux Electron-node-02 4.4.21-69-default #1 SMP Tue Oct 25 10:58:20 UTC 2016 (9464f67)  
  x86_64 x86_64 x86_64 GNU/Linux  

run-level 3 Dec 27 18:15  

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 -[TEE115E-1.01]- 08/11/2017  
  Memory:  
    48x Samsung M393A4K40BB2-CTD 32 GB 2 rank 2666  

(Continued on next page)
Lenovo Global Technology

ThinkSystem SR850
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SPEC CPU2017 Floating Point Speed Result

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Hardware Availability: Aug-2017
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Platform Notes (Continued)

(End of data from sysinfo program)

Compiler Version Notes

==============================================================================
CC 619.lbm_s(base) 638.imagick_s(base, peak) 644.nab_s(base, peak)
ICC (ICC) 18.0.0 20170811
Copyright (C) 1985-2017 Intel Corporation. All rights reserved.

==============================================================================
CC 619.lbm_s(peak)
ICC (ICC) 18.0.0 20170811
Copyright (C) 1985-2017 Intel Corporation. All rights reserved.

==============================================================================
FC 607.cactuBSSN_s(base)
ICPC (ICC) 18.0.0 20170811
Copyright (C) 1985-2017 Intel Corporation. All rights reserved.
icc (ICC) 18.0.0 20170811
Copyright (C) 1985-2017 Intel Corporation. All rights reserved.
ifort (IFORT) 18.0.0 20170811
Copyright (C) 1985-2017 Intel Corporation. All rights reserved.

==============================================================================
FC 607.cactuBSSN_s(peak)
icpc (ICC) 18.0.0 20170811
Copyright (C) 1985-2017 Intel Corporation. All rights reserved.
icc (ICC) 18.0.0 20170811
Copyright (C) 1985-2017 Intel Corporation. All rights reserved.
ifort (IFORT) 18.0.0 20170811
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FC 603.bwaves_s(base) 649.fotonik3d_s(base) 654.roms_s(base)
ifort (IFORT) 18.0.0 20170811
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Compiler Version Notes (Continued)

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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
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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

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
-nostandard-realloc-lhs -align array32byte
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
-nostandard-realloc-lhs -align array32byte
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
-nostandard-realloc-lhs -align array32byte

Base Other Flags
C benchmarks:
-m64 -std=c11
Fortran benchmarks:
-m64

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SPEC CPU2017 Floating Point Speed Result
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Software Availability: Sep-2017

Base Other Flags (Continued)

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

Benchmarks using Fortran, C, and C++:
-m64 -std=c11

Peak 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

Peak Portability Flags

Same as Base Portability Flags

Peak Optimization Flags

C benchmarks:

619.lbm_s: -prof-gen(pass 1) -prof-use(pass 2) -O2 -xCORE-AVX512
-qopt-prefetch -ipo -O3 -ffinite-math-only -no-prec-div
-qopt-mem-layout-trans=3 -DSPEC_SUPPRESS_OPENMP -qopenmp
-DSPEC_OPENMP

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

644.nab_s: Same as 638.imagick_s

(Continued on next page)
Lenovo Global Technology
ThinkSystem SR850
(2.60 GHz, Intel Xeon Gold 6126)

**SPEC CPU2017 Floating Point Speed Result**

**SPECspeed2017_fp_base = 127**

**SPECspeed2017_fp_peak = 127**

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<th>CPU2017 License:</th>
<th>9017</th>
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<th>Dec-2017</th>
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**Peak Optimization Flags (Continued)**

Fortran benchmarks:
- `-prof-gen(pass 1) -prof-use(pass 2) -DSPEC_SUPPRESS_OPENMP`
- `-DSPEC_OPENMP -O2 -xCORE-AVX512 -qopt-prefetch -ipo -O3`
- `-ffinite-math-only -no-prec-div -qopt-mem-layout-trans=3 -qopenmp`
- `-nostandard-realloc-lhs -align array32byte`

Benchmarks using both Fortran and C:

621.wrf_s: `-prof-gen(pass 1) -prof-use(pass 2) -O2 -xCORE-AVX512`
- `-qopt-prefetch -ipo -O3 -ffinite-math-only -no-prec-div`
- `-qopt-mem-layout-trans=3 -DSPEC_SUPPRESS_OPENMP -qopenmp`
- `-DSPEC_OPENMP -nostandard-realloc-lhs -align array32byte`

627.cam4_s: `-xCORE-AVX512 -ipo -O3 -no-prec-div -qopt-prefetch`
- `-ffinite-math-only -qopt-mem-layout-trans=3 -qopenmp`
- `-DSPEC_OPENMP -nostandard-realloc-lhs -align array32byte`

628.pop2_s: Same as 621.wrf_s

Benchmarks using Fortran, C, and C++:

- `-prof-gen(pass 1) -prof-use(pass 2) -O2 -xCORE-AVX512 -qopt-prefetch`
- `-ipo -O3 -ffinite-math-only -no-prec-div -qopt-mem-layout-trans=3`
- `-DSPEC_SUPPRESS_OPENMP -qopenmp -DSPEC_OPENMP -nostandard-realloc-lhs`
- `-align array32byte`

**Peak Other Flags**

C benchmarks:
- `-m64 -std=c11`

Fortran benchmarks:
- `-m64`

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

Benchmarks using Fortran, C, and C++:
- `-m64 -std=c11`

The flags files that were used to format this result can be browsed at:
- [http://www.spec.org/cpu2017/flags/Intel-ic18.0-official-linux64.html](http://www.spec.org/cpu2017/flags/Intel-ic18.0-official-linux64.html)
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You can also download the XML flags sources by saving the following links:
- [http://www.spec.org/cpu2017/flags/Intel-ic18.0-official-linux64.xml](http://www.spec.org/cpu2017/flags/Intel-ic18.0-official-linux64.xml)

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For questions about this result, please contact the tester. For other inquiries, please contact info@spec.org.

Tested with SPEC CPU2017 v1.0.2 on 2017-12-27 10:28:33-0500.
Originally published on 2018-03-06.