Lenovo Global Technology
ThinkSystem SR530
(2.60 GHz, Intel Xeon Gold 6126)

SPECspeed2017_fp_base = 92.6
SPECspeed2017_fp_peak = 94.1

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

Threads

<table>
<thead>
<tr>
<th>Specbench</th>
<th>Threads</th>
<th>SPECspeed2017_fp_base (92.6)</th>
<th>SPECspeed2017_fp_peak (94.1)</th>
</tr>
</thead>
<tbody>
<tr>
<td>603.bwaves_s</td>
<td>24</td>
<td>112</td>
<td>42.7</td>
</tr>
<tr>
<td>607.cactuBSSN_s</td>
<td>24</td>
<td>39.8</td>
<td>114</td>
</tr>
<tr>
<td>619.lbm_s</td>
<td>24</td>
<td>73.7</td>
<td>39.7</td>
</tr>
<tr>
<td>621.wrf_s</td>
<td>24</td>
<td>64.9</td>
<td>73.2</td>
</tr>
<tr>
<td>627.cam4_s</td>
<td>24</td>
<td>64.7</td>
<td>60.5</td>
</tr>
<tr>
<td>628.pop2_s</td>
<td>24</td>
<td>61.9</td>
<td>54.0</td>
</tr>
<tr>
<td>638.imagick_s</td>
<td>24</td>
<td>81.5</td>
<td>81.9</td>
</tr>
<tr>
<td>644.nab_s</td>
<td>24</td>
<td>73.6</td>
<td>146</td>
</tr>
<tr>
<td>649.fotonik3d_s</td>
<td>24</td>
<td>73.3</td>
<td>146</td>
</tr>
<tr>
<td>654.roms_s</td>
<td>24</td>
<td>95.3</td>
<td>100</td>
</tr>
</tbody>
</table>

Hardware
CPU Name: Intel Xeon Gold 6126
Max MHz.: 3700
Nominal: 2600
Enabled: 24 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: 19.25 MB I+D on chip per core
Other: None
Memory: 384 GB (12 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 4.4.114-92.64-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
File System: btrfs
System State: Run level 3 (multi-user)
Base Pointers: 64-bit
Peak Pointers: 64-bit
Other: None
Lenovo Global Technology
ThinkSystem SR530
(2.60 GHz, Intel Xeon Gold 6126)

Results Table

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Threads</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Threads</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Seconds</th>
<th>Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>603.bwaves_s</td>
<td></td>
<td>139</td>
<td></td>
<td>139</td>
<td></td>
<td>426</td>
<td></td>
<td></td>
<td>138</td>
<td></td>
<td>427</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>607.cactuBSSN_s</td>
<td></td>
<td>149</td>
<td>112</td>
<td>148</td>
<td>112</td>
<td>149</td>
<td>112</td>
<td></td>
<td>146</td>
<td>114</td>
<td>146</td>
<td>114</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>621.wrf_s</td>
<td></td>
<td>180</td>
<td>73.5</td>
<td>179</td>
<td>73.7</td>
<td>178</td>
<td>74.3</td>
<td></td>
<td>178</td>
<td>74.3</td>
<td>178</td>
<td>74.3</td>
<td>178</td>
<td>74.3</td>
<td>178</td>
<td>74.3</td>
</tr>
<tr>
<td>627.cam4_s</td>
<td></td>
<td>136</td>
<td>65.2</td>
<td>137</td>
<td>64.9</td>
<td>137</td>
<td>64.9</td>
<td></td>
<td>137</td>
<td>64.9</td>
<td>137</td>
<td>64.9</td>
<td>137</td>
<td>64.9</td>
<td>137</td>
<td>64.9</td>
</tr>
<tr>
<td>628.pop2_s</td>
<td></td>
<td>196</td>
<td>60.6</td>
<td>198</td>
<td>60.0</td>
<td>196</td>
<td>60.5</td>
<td></td>
<td>194</td>
<td>60.5</td>
<td>194</td>
<td>60.5</td>
<td>194</td>
<td>60.5</td>
<td>194</td>
<td>60.5</td>
</tr>
<tr>
<td>638.imagick_s</td>
<td></td>
<td>176</td>
<td>81.9</td>
<td>177</td>
<td>81.3</td>
<td>177</td>
<td>81.5</td>
<td></td>
<td>176</td>
<td>81.5</td>
<td>176</td>
<td>81.5</td>
<td>176</td>
<td>81.5</td>
<td>176</td>
<td>81.5</td>
</tr>
<tr>
<td>644.nab_s</td>
<td></td>
<td>119</td>
<td>146</td>
<td>120</td>
<td>146</td>
<td>119</td>
<td>147</td>
<td></td>
<td>119</td>
<td>147</td>
<td>119</td>
<td>147</td>
<td>119</td>
<td>147</td>
<td>119</td>
<td>147</td>
</tr>
<tr>
<td>649.fotonik3d_s</td>
<td></td>
<td>125</td>
<td>73.1</td>
<td>123</td>
<td>73.8</td>
<td>124</td>
<td>73.6</td>
<td></td>
<td>124</td>
<td>73.6</td>
<td>124</td>
<td>73.6</td>
<td>124</td>
<td>73.6</td>
<td>124</td>
<td>73.6</td>
</tr>
<tr>
<td>654.roms_s</td>
<td></td>
<td>165</td>
<td>95.4</td>
<td>165</td>
<td>95.3</td>
<td>165</td>
<td>95.3</td>
<td></td>
<td>157</td>
<td>100</td>
<td>157</td>
<td>100</td>
<td>157</td>
<td>100</td>
<td>157</td>
<td>100</td>
</tr>
</tbody>
</table>

SPECspeed2017_fp_base = 92.6
SPECspeed2017_fp_peak = 94.1

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>&1 /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.

Platform Notes
BIOS configuration:
Choose Operating Mode set to Maximum Performance
Hyper-Threading set to Disable

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

- MONITORMWAIT set to Enable
- Teusted Execution Technology set to Enable
- DCU Streamer Prefetcher set to Disable
- DCA set to Enable
- Stale AtoS set to Enable
- LLC dead line alloc set to Enable

```
Sysinfo program /home/cpu2017.1.0.2.ic18.0/bin/sysinfo
Rev: r5797 of 2017-06-14 96c45e4568ad54c135fd618bfc091c0f
running on linux-dqoj Fri May 18 23:34:41 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) Gold 6126 CPU @ 2.60GHz
  2 "physical id"s (chips)
  24 "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 3 4 5 6 8 9 10 11 12 13
  physical 1: 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): 24
On-line CPU(s) list: 0-23
Thread(s) per core: 1
Core(s) per socket: 12
Socket(s): 2
NUMA node(s): 2
Vendor ID: GenuineIntel
CPU family: 6
Model: 85
Model name: Intel(R) Xeon(R) Gold 6126 CPU @ 2.60GHz
Stepping: 4
CPU MHz: 2593.896
BogoMIPS: 5187.79
Virtualization: VT-x
L1d cache: 32K
L1i cache: 32K
L2 cache: 1024K
L3 cache: 19712K
```

(Continued on next page)
Lenovo Global Technology

ThinkSystem SR530
(2.60 GHz, Intel Xeon Gold 6126)

SPEC CPU2017 Floating Point Speed Result

Copyright 2017-2018 Standard Performance Evaluation Corporation

Lenovo Global Technology

SPECspeed2017_fp_base = 92.6
SPECspeed2017_fp_peak = 94.1

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

Test Date: May-2018
Hardware Availability: Aug-2017
Software Availability: Feb-2018

Platform Notes (Continued)

NUMA node0 CPU(s): 0-11
NUMA node1 CPU(s): 12-23
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
aperfmpref eagerfpu pni pclmulqdq dtes64 monitor ds_cpl vmx smx est tm2 ssse3 sdbg
fma cx16 xtpr pdcm pcid dca sse4_1 sse4_2 x2apic movbe popcnt tsc_deadline_timer aes
xsave avx f16c rdrand lahf_lm abm 3dnowprefetch ida arat ebp invpcid_single pln pts
dtherm intel_pt rsb_ctxsw spec_ctrl retpoline kaisert pr_shadow vnni flexpriority
vpt vpid fsgsbase tsc_adjust bmi1 hle avx2 smep bmi2 erms invpcid rtm cqm mpx
avx512f avx512dq rdseed adx smap clflushopt clwb avx512cd avx512bw avx512vl xsaveopt
xsavexc xgetbv1 cqm_llc cqm_occup_llc

/platform.cache data
cache size : 19712 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
node 0 size: 193110 MB
node 0 free: 191198 MB
node 1 cpus: 12 13 14 15 16 17 18 19 20 21 22 23
node 1 size: 193504 MB
node 1 free: 192789 MB
node distances:
node   0   1
0:  10  21
1:  21  10

From /proc/meminfo
MemTotal: 3958936888 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"

(Continued on next page)
Lenovo Global Technology
ThinkSystem SR530
(2.60 GHz, Intel Xeon Gold 6126)

SPECspeed2017_fp_base = 92.6
SPECspeed2017_fp_peak = 94.1

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

Platform Notes (Continued)

ID="sles"
ANSI_COLOR="0;32"
CPE_NAME="cpe:/o:suse:sles:12:sp2"

uname -a:
    Linux linux-dqoj 4.4.114-92.64-default #1 SMP Thu Feb 1 19:18:19 UTC 2018 (c6ce5db)
x86_64 x86_64 x86_64 GNU/Linux

run-level 3 May 18 18:21

SPEC is set to: /home/cpu2017.1.0.2.ic18.0

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 -[TEE119R-1.22]- 02/06/2018
Memory:
    12x Hynix HMA84GR7AFR4N-VK 32 GB 2 rank 2666

(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.
iccc (ICC) 18.0.0 20170811

(Continued on next page)
Lenovo Global Technology
ThinkSystem SR530
(2.60 GHz, Intel Xeon Gold 6126)

SPECspeed2017_fp_base = 92.6
SPECspeed2017_fp_peak = 94.1

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

Test Date: May-2018
Hardware Availability: Aug-2017
Software Availability: Feb-2018

Compiler Version Notes (Continued)

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 603.bwaves_s(base) 649.fotonik3d_s(base) 654.roms_s(base)
==============================================================================
ifort (IFORT) 18.0.0 20170811
Copyright (C) 1985-2017 Intel Corporation. All rights reserved.

==============================================================================
CC 621.wrf_s(base) 627.cam4_s(base, peak) 628.pop2_s(base)
==============================================================================
ifort (IFORT) 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.

==============================================================================
CC 621.wrf_s(peak) 628.pop2_s(peak)
==============================================================================
ifort (IFORT) 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.

Compiler Version Notes (Continued)
Lenovo Global Technology
ThinkSystem SR530
(2.60 GHz, Intel Xeon Gold 6126)

**SPECspeed2017_fp_base** = 92.6
**SPECspeed2017_fp_peak** = 94.1

<table>
<thead>
<tr>
<th>CPU2017 License: 9017</th>
<th>Test Date: May-2018</th>
</tr>
</thead>
<tbody>
<tr>
<td>Test Sponsor: Lenovo Global Technology</td>
<td>Hardware Availability: Aug-2017</td>
</tr>
<tr>
<td>Tested by: Lenovo Global Technology</td>
<td>Software Availability: Feb-2018</td>
</tr>
</tbody>
</table>

### 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

### 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-AVX2 -ipo -O3 -no-prec-div -qopt-prefetch -ffinite-math-only
  - -qopt-mem-layout-trans=3 -qopenmp -DSPEC_OPENMP

- Fortran benchmarks:
  - -DSPEC_OPENMP -xCORE-AVX2 -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-AVX2 -ipo -O3 -no-prec-div -qopt-prefetch -ffinite-math-only
  - -qopt-mem-layout-trans=3 -qopenmp -DSPEC_OPENMP
  - -nostandard-realloc-lhs -align array32byte

(Continued on next page)
Spec CPU2017 Floating Point Speed Result

Lenovo Global Technology
ThinkSystem SR530
(2.60 GHz, Intel Xeon Gold 6126)

SPECspeed2017_fp_base = 92.6
SPECspeed2017_fp_peak = 94.1

Base Optimization Flags (Continued)

Benchmarks using Fortran, C, and C++:
-xCORE-AVX2 -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

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
Lenovo Global Technology
ThinkSystem SR530
(2.60 GHz, Intel Xeon Gold 6126)

SPECspeed2017_fp_base = 92.6
SPECspeed2017_fp_peak = 94.1

CPU2017 License: 9017
Test Date: May-2018
Test Sponsor: Lenovo Global Technology
Hardware Availability: Aug-2017
Tested by: Lenovo Global Technology
Software Availability: Feb-2018

Peak Optimization Flags

C benchmarks:
619.lbm_s: -prof-gen(pass 1) -prof-use(pass 2) -O2 -xCORE-AVX2
-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-AVX2 -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

Fortran benchmarks:
-prof-gen(pass 1) -prof-use(pass 2) -DSPEC_SUPPRESS_OPENMP
-DSPEC_OPENMP -O2 -xCORE-AVX2 -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-AVX2
-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-AVX2 -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-AVX2 -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

(Continued on next page)
Lenovo Global Technology
ThinkSystem SR530
(2.60 GHz, Intel Xeon Gold 6126)

SPECspeed2017_fp_base = 92.6
SPECspeed2017_fp_peak = 94.1

CPU2017 License: 9017
Test Sponsor: Lenovo Global Technology
Test Date: May-2018
Tested by: Lenovo Global Technology
Hardware Availability: Aug-2017
Software Availability: Feb-2018

Peak Other Flags (Continued)

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/Lenovo-Platform-SPECcpu2017-Flags-V1.2-SKL-C.html

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/Lenovo-Platform-SPECcpu2017-Flags-V1.2-SKL-C.xml

SPEC is a registered trademark of the Standard Performance Evaluation Corporation. All other brand and product names appearing in this result are trademarks or registered trademarks of their respective holders.

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 2018-05-18 11:34:41-0400.
Originally published on 2018-06-12.