**Lenovo Global Technology**

**ThinkSystem SR630**

(3.80 GHz, Intel Xeon Platinum 8256)

---

### SPECspeed2017_fp_base = 58.6

**SPECspeed2017_fp_peak = Not Run**

---

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

---

<table>
<thead>
<tr>
<th>Threads</th>
<th>SPECspeed2017_fp_base (58.6)</th>
</tr>
</thead>
<tbody>
<tr>
<td>603.bwaves_s</td>
<td>8</td>
</tr>
<tr>
<td>607.cactuBSSN_s</td>
<td>8</td>
</tr>
<tr>
<td>619.lbm_s</td>
<td>8</td>
</tr>
<tr>
<td>621.wrf_s</td>
<td>8</td>
</tr>
<tr>
<td>627.cam4_s</td>
<td>8</td>
</tr>
<tr>
<td>628.pop2_s</td>
<td>8</td>
</tr>
<tr>
<td>638.imagick_s</td>
<td>8</td>
</tr>
<tr>
<td>644.nab_s</td>
<td>8</td>
</tr>
<tr>
<td>649.fotonik3d_s</td>
<td>8</td>
</tr>
</tbody>
</table>

---

**Hardware**

- **CPU Name:** Intel Xeon Platinum 8256  
- **Max MHz.:** 3900  
- **Nominal:** 3800  
- **Enabled:** 8 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:** 16.5 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  
- **Other:** None

---

**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:** Fortran: Version 19.0.0.117 of Intel Fortran  
- **Compiler for Linux:** Compiler for Linux  
- **Parallel:** Yes  
- **Firmware:** Lenovo BIOS Version IVE135P 2.10 released Feb-2019  
- **File System:** xfs  
- **System State:** Run level 3 (multi-user)  
- **Base Pointers:** 64-bit  
- **Peak Pointers:** Not Applicable  
- **Other:** None
### Lenovo Global Technology

**ThinkSystem SR630**

(3.80 GHz, Intel Xeon Platinum 8256)

---

**SPEC CPU2017 Floating Point Speed Result**

**CPU2017 License:** 9017

**Test Sponsor:** Lenovo Global Technology

**Tested by:** Lenovo Global Technology

**Test Date:** May-2019

**Hardware Availability:** Apr-2019

**Software Availability:** Oct-2018

---

### 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>
</tr>
</thead>
<tbody>
<tr>
<td>603.bwaves_s</td>
<td>8</td>
<td>209</td>
<td>283</td>
<td>209</td>
<td>282</td>
<td>209</td>
<td>282</td>
</tr>
<tr>
<td>607.cactuBSSN_s</td>
<td>8</td>
<td>297</td>
<td>56.1</td>
<td>298</td>
<td>56.0</td>
<td>296</td>
<td>56.3</td>
</tr>
<tr>
<td>619.lbm_s</td>
<td>8</td>
<td>113</td>
<td>46.4</td>
<td>113</td>
<td>46.5</td>
<td>113</td>
<td>46.4</td>
</tr>
<tr>
<td>621.wrf_s</td>
<td>8</td>
<td>218</td>
<td>60.5</td>
<td>220</td>
<td>60.1</td>
<td>218</td>
<td>60.8</td>
</tr>
<tr>
<td>627.cam4_s</td>
<td>8</td>
<td>301</td>
<td>29.5</td>
<td>301</td>
<td>29.5</td>
<td>300</td>
<td>29.5</td>
</tr>
<tr>
<td>628.pop2_s</td>
<td>8</td>
<td>253</td>
<td>47.0</td>
<td>252</td>
<td>47.2</td>
<td>253</td>
<td>47.0</td>
</tr>
<tr>
<td>638.imagick_s</td>
<td>8</td>
<td>397</td>
<td>36.3</td>
<td>398</td>
<td>36.3</td>
<td>398</td>
<td>36.3</td>
</tr>
<tr>
<td>644.nab_s</td>
<td>8</td>
<td>260</td>
<td>67.1</td>
<td>261</td>
<td>66.9</td>
<td>262</td>
<td>66.7</td>
</tr>
<tr>
<td>649.fotonik3d_s</td>
<td>8</td>
<td>158</td>
<td>57.8</td>
<td>157</td>
<td>58.2</td>
<td>156</td>
<td>58.4</td>
</tr>
<tr>
<td>654.roms_s</td>
<td>8</td>
<td>284</td>
<td>55.5</td>
<td>286</td>
<td>55.0</td>
<td>286</td>
<td>55.1</td>
</tr>
</tbody>
</table>

---

**SPECspeed2017_fp_base = 58.6**

**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-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.
SPEC CPU2017 Floating Point Speed Result

Lenovo Global Technology

ThinkSystem SR630
(3.80 GHz, Intel Xeon Platinum 8256)

SPECspeed2017_fp_base = 58.6
SPECspeed2017_fp_peak = Not Run

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
SNC set to Enable
Stale AtoS set to Enable

Sysinfo program /home/cpu2017-1.0.5-1c19/bin/sysinfo
Rev: r5974 of 2018-05-19 9bcede8f2999c33d61f64985e45859ea9
running on localhost.localdomain Mon May  6 20:29:14 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) Platinum 8256 CPU @ 3.80GHz
  2 "physical id"s (chips)
  8 "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 : 4
siblings : 4
physical 0: cores 1 5 9 13
physical 1: cores 2 5 13

From lscpu:
Architecture: x86_64
CPU op-mode(s): 32-bit, 64-bit
Byte Order: Little Endian
CPU(s): 8
On-line CPU(s) list: 0-7
Thread(s) per core: 1
Core(s) per socket: 4
Socket(s): 2
NUMA node(s): 4
Vendor ID: GenuineIntel
CPU family: 6
Model: 85
Model name: Intel(R) Xeon(R) Platinum 8256 CPU @ 3.80GHz
Stepping: 6
CPU MHz: 3800.000
BogoMIPS: 7600.00
Virtualization: VT-x
L1d cache: 32K
L1i cache: 32K

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

Lenovo Global Technology
ThinkSystem SR630
(3.80 GHz, Intel Xeon Platinum 8256)

SPECspeed2017_fp_base = 58.6
SPECspeed2017_fp_peak = Not Run

Platform Notes (Continued)

L2 cache: 1024K
L3 cache: 16896K
NUMA node0 CPU(s): 0,2
NUMA node1 CPU(s): 1,3
NUMA node2 CPU(s): 4,5
NUMA node3 CPU(s): 6,7
Flags: fpu vme de pse tsc msr pae mce cx8 apic sep mtrr pge mca cmov
pat pse36 clflush dts aperfmperf egaerfpu 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 epb cat_l3 cdp_l3 intel_pt ssbd mba
ibrs ibbp stibp ibrs_enhanced tpr_shadow vmmi flexpriority ept vpid fsgsbase
tsc_adjust bni hle avx2 smep bmi2 erms invpcid rtm cmqm mpx rdt_a avx512f avx512dq
rdseed adx clflushopt clwb avx512cd avx512bw avx512vl xsaveopt xsave xgetbv1
cqm_llc cqm_occup_llc cqm_mbb_total cqm_mbb_local dtherm ida arat pln pts pku ospke
avx512_vnni spec_ctrl intel_stibp flush_l1d arch_capabilities

/proc/cpuinfo cache data
  cache size : 16896 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 2
  node 0 size: 97977 MB
  node 0 free: 95677 MB
  node 1 cpus: 1 3
  node 1 size: 98304 MB
  node 1 free: 95948 MB
  node 2 cpus: 4 5
  node 2 size: 98304 MB
  node 2 free: 95790 MB
  node 3 cpus: 6 7
  node 3 size: 98304 MB
  node 3 free: 95981 MB
  node distances:
    node 0 1 2 3
    0: 10 11 21 21
    1: 11 10 21 21
    2: 21 21 10 11
    3: 21 21 11 10

From /proc/meminfo
  MemTotal: 395878976 kB
  HugePages_Total: 0
  Hugepagesize: 2048 kB

(Continued on next page)
Lenovo Global Technology
ThinkSystem SR630
(3.80 GHz, Intel Xeon Platinum 8256)

SPEC CPU2017 Floating Point Speed Result

Copyright 2017-2019 Standard Performance Evaluation Corporation

Lenovo Global Technology

SPECspeed2017_fp_base = 58.6
SPECspeed2017_fp_peak = Not Run

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

Test Date: May-2019
Hardware Availability: Apr-2019
Software Availability: Oct-2018

Platform Notes (Continued)

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)"
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

run-level 3 May 6 20:27

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

Filesystem Type Size Used Avail Use% Mounted on
/dev/sda2 xfs 689G 31G 659G 5% /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 -[IVE135P-2.10]- 02/13/2019
Memory:
24x Samsung M393A2K43CB2-CVF 16 GB 2 rank 2933

(End of data from sysinfo program)

Compiler Version Notes

==============================================================================
CC 619.lbm_s(base) 638.imagick_s(base) 644.nab_s(base)
==============================================================================

(Continued on next page)
Lenovo Global Technology
ThinkSystem SR630  
(3.80 GHz, Intel Xeon Platinum 8256)

<table>
<thead>
<tr>
<th>SPECspeed2017_fp_base</th>
<th>58.6</th>
</tr>
</thead>
<tbody>
<tr>
<td>SPECspeed2017_fp_peak</td>
<td>Not Run</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>CPU2017 License: 9017</th>
<th>Test Date: May-2019</th>
</tr>
</thead>
<tbody>
<tr>
<td>Test Sponsor: Lenovo Global Technology</td>
<td>Hardware Availability: Apr-2019</td>
</tr>
<tr>
<td>Tested by: Lenovo Global Technology</td>
<td>Software Availability: Oct-2018</td>
</tr>
</tbody>
</table>

**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.

==============================================================================
FC  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.
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.

==============================================================================
FC  603.bwaves_s(base) 649.fotonik3d_s(base) 654.roms_s(base)  
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.

==============================================================================
CC  621.wrf_s(base) 627.cam4_s(base) 628.pop2_s(base)  
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
```
### Lenovo Global Technology

ThinkSystem SR630  
(3.80 GHz, Intel Xeon Platinum 8256)

<table>
<thead>
<tr>
<th>SPEC_speed2017_fp_base</th>
<th>58.6</th>
</tr>
</thead>
<tbody>
<tr>
<td>SPEC_speed2017_fp_peak</td>
<td>Not Run</td>
</tr>
</tbody>
</table>

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

### Base Compiler Invocation (Continued)

- **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

### 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
## Lenovo Global Technology

**ThinkSystem SR630**  
(3.80 GHz, Intel Xeon Platinum 8256)

<table>
<thead>
<tr>
<th>SPECspeed2017_fp_base</th>
<th>58.6</th>
</tr>
</thead>
<tbody>
<tr>
<td>SPECspeed2017_fp_peak</td>
<td>Not Run</td>
</tr>
</tbody>
</table>

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

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-A.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-A.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 v1.0.5 on 2019-05-06 08:29:14-0400.  
Originally published on 2019-05-29.