# SPEC CPU®2017 Floating Point Rate Result

## Lenovo Global Technology

ThinkSystem SR860 V2  
(2.60 GHz, Intel Xeon Platinum 8376HL)

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**CPU2017 License:** 9017  
**Test Date:** Oct-2020  
**Test Sponsor:** Lenovo Global Technology  
**Tested by:** Lenovo Global Technology  
**Hardware Availability:** Nov-2020  
**Software Availability:** Jul-2020

### Hardware

**CPU Name:** Intel Xeon Platinum 8376HL  
**Max MHz:** 4300  
**Nominal:** 2600  
**Enabled:** 112 cores, 4 chips  
**Orderable:** 2, 4 chips

### Software

**OS:** Red Hat Enterprise Linux release 8.2 (Ootpa)  
**Kernel:** 4.18.0-193.el8.x86_64

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<tr>
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<th>SPECrate®2017_fp_energy_base</th>
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Lenovo Global Technology
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**Hardware (Continued)**

| Cache L1: | 32 KB I + 32 KB D on chip per core |
| L2:      | 1 MB I+D on chip per core |
| L3:      | 38.5 MB I+D on chip per chip |
| Other:   | None |
| Memory:  | 384 GB (24 x 16 GB 2Rx8 PC4-3200AA-R) |
| Storage: | 1 x 960 GB SATA SSD |
| Other:   | None |

**Software (Continued)**

| Compiler: | C/C++: Version 19.1.2.275 of Intel C/C++ Compiler for Linux; Fortran: Version 19.1.2.275 of Intel Fortran Compiler for Linux |
| Parallel: | No |
| Firmware: | Lenovo BIOS Version M5E107D 1.00 released Sep-2020 |
| File System: | xfs |
| System State: | Run level 3 (multi-user) |
| Base Pointers: | 64-bit |
| Peak Pointers: | 64-bit |
| Other: | jemalloc memory allocator V5.0.1 |

**Power**

| Max. Power (W): | 1020.2 |
| Idle Power (W): | 159.58 |
| Min. Temperature (C): | 20.50 |
| Elevation (m): | 43 |
| Line Standard: | 220 V / 50 Hz / 1 phase / 3 wires |
| Provisioning: | Line-powered |

**Power Analyzer**

| Power Analyzer: | WIN:9888 |
| Hardware Vendor: | YOKOGAWA, Inc. |
| Model: | YokogawaWT310E |
| Serial Number: | C3UD17023E |
| Input Connection: | Default |
| Metrology Institute: | CNAS |
| Calibration By: | China CEPREI Laboratory |
| Calibration Label: | J202009040176A-0001 |
| Calibration Date: | 25-Sep-2020 |
| PTDaemon™ Version: | 1.9.1 (a2d19f26; 2019-07-17) |
| Setup Description: | Connected to PSU1 |

**Power-Related Hardware**

| Power Supply: | 1 x 1800 W (non-redundant) |
| Details: | ThinkSystem 1800W Platinum Power Supply 4P57A26294 |
| Backplane: | 8 x 2.5-inch HDD back plane |
| Other Storage: | None |
| Storage Model #: | 4XB7A17089 |
| NICs Installed: | 1 x ThinkSystem Ethernet 4-port Adaptor @ 1 Gb |
| NICs Enabled (FW/OS): | 4 / 1 |
| NICs Connected/Speed: | 1 @ 1 Gb |
| Other HW Model #: | 1 x ThinkSystem SR860 V2 Performance Fan Upgrade Kit |

**Temperature Meter**

| Temperature Meter: | WIN:9889 |
| Hardware Vendor: | Digi International, Inc. |
| Model: | DigiWATCHPORT_H |
| Serial Number: | COM1 |
| Input Connection: | USB |
| PTDaemon Version: | 1.9.1 (a2d19f26; 2019-07-17) |
| Setup Description: | 50 mm in front of SUT main intake |
### Base Results Table

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### Submit Notes

The numactl mechanism was used to bind copies to processors. The config file option 'submit' was used to generate numactl commands to bind each copy to a specific processor.

For details, please see the config file.
Lenovo Global Technology
ThinkSystem SR860 V2
(2.60 GHz, Intel Xeon Platinum 8376HL)

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

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Operating System Notes
Stack size set to unlimited using "ulimit -s unlimited"

Environment Variables Notes
Environment variables set by runcpu before the start of the run:
LD_LIBRARY_PATH = "/home/cpu2017-1.1.0-ic19.1u2/lib/intel64:/home/cpu2017-1.1.0-ic19.1u2/j e5.0.1-64"
MALLOC_CONF = "retain:true"

General Notes
Binaries compiled on a system with 1x Intel Core i9-7980XE CPU + 64GB RAM
memory using Redhat Enterprise Linux 8.0
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
runcpu command invoked through numactl i.e.:
  numactl --interleave=all runcpu <etc>
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.
  jemalloc, a general purpose malloc implementation
  built with the RedHat Enterprise 7.5, and the system compiler gcc 4.8.5

Platform Notes
BIOS settings:
Choose Operating Mode set to Maximum Performance and then set it to Custom Mode
Turbo Mode set to Disabled
CPU P-state Control set to Cooperative with Legacy
C-States set to Legacy
Memory Power Management set to Automatic
UPI Link Disable set to Disabled 1 Link
Platform Controlled Type set to Minimal Power
Hyper-Threading set to Disabled
SNC set to Enabled

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SPECCPU®2017 Floating Point Rate Result

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CPU2017 License: 9017
Test Date: Oct-2020
Test Sponsor: Lenovo Global Technology
Hardware Availability: Nov-2020
Tested by: Lenovo Global Technology
Software Availability: Jul-2020

Platform Notes (Continued)

C1 Enhanced Mode set to Enabled
LLC dead line alloc set to Disable

Sysinfo program /home/cpu2017-1.1.0-ic19.1u2/bin/sysinfo
Rev: r6365 of 2019-08-21 295195f888a3d7edbb1e6e46a485a0011
running on localhost.localdomain Sun Oct 25 08:24:58 2020

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 8376HL CPU @ 2.60GHz
  4 "physical id"s (chips)
  112 "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 : 28
siblings : 28
physical 0: cores 0 1 2 3 4 5 6 8 9 10 11 12 13 14 16 17 18 19 20 21 22 24 25 26 27 28 29 30
physical 1: cores 0 1 2 3 4 5 6 8 9 10 11 12 13 14 16 17 18 19 20 21 22 24 25 26 27 28 29 30
physical 2: cores 0 1 2 3 4 5 6 8 9 10 11 12 13 14 16 17 18 19 20 21 22 24 25 26 27 28 29 30
physical 3: cores 0 1 2 3 4 5 6 8 9 10 11 12 13 14 16 17 18 19 20 21 22 24 25 26 27 28 29 30

From lscpu:
Architecture: x86_64
CPU op-mode(s): 32-bit, 64-bit
Byte Order: Little Endian
CPU(s): 112
On-line CPU(s) list: 0-111
Thread(s) per core: 1
Core(s) per socket: 28
Socket(s): 4
NUMA node(s): 8
Vendor ID: GenuineIntel
CPU family: 6
Model: 85
Model name: Intel(R) Xeon(R) Platinum 8376HL CPU @ 2.60GHz
Stepping: 11
CPU MHz: 1000.045
CPU max MHz: 2600.0000

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Tested by: Lenovo Global Technology
Software Availability: Jul-2020

Platform Notes (Continued)

CPU min MHz: 1000.0000
BogoMIPS: 5200.00
Virtualization: VT-x
L1d cache: 32K
L1i cache: 32K
L2 cache: 1024K
L3 cache: 39424K
NUMA node0 CPU(s): 0-3,7-9,14-17,21-23
NUMA node1 CPU(s): 4-6,10-13,18-20,24-27
NUMA node2 CPU(s): 28-31,35-37,42-45,49-51
NUMA node3 CPU(s): 32-34,38-41,46-48,52-55
NUMA node4 CPU(s): 56-59,63-65,70-73,77-79
NUMA node5 CPU(s): 60-62,66-69,74-76,80-83
NUMA node6 CPU(s): 84-87,91-93,98-101,105-107
NUMA node7 CPU(s): 88-90,94-97,102-104,108-111
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 cpuid
aperfmpref pni pclmulqdq dtes64 monitor ds_cpl vmx smx est tm2 ssse3 sdbg fma cx16
xtrm pdcm pcid dca sse4_1 sse4_2 x2apic movbe popcnt tsc_deadline_timer aes xsave
avx f16c rdrand lahf_lm abm 3dnowprefetch cpuid_fault epb cat_l3 cdp_l3
invvpicd_single intel_pmm ssbd mba ibrs ibpb ibrs_enhanced tpr_shadow vmni
flexpriority ept vpid fsgsbase tsc_adjust bmi1 hle avx2 smep bmi2 erms invpcid rtm
cqm mpx rdtd_a avx512f avx512dq rdseed adx smap clflushopt clwb intel_pt avx512cd
avx512bw avx512vl xsaveopt xsavec xsavec xgetbv1 xsave5 cqm_llc cqm_occ1c cqm_mb_total
cqm_mbb_local avx512_bf16 dtherm arat pti pts hwp hwp_act_window hwp_epp hwp_pkg_req
pku ospke avx512_vnni md_clear flush_l1d arch_capabilities

/proc/cpuinfo cache data
  cache size: 39424 KB

From numact1 --hardware WARNING: a numactl 'node' might or might not correspond to a
physical chip.
  available: 8 nodes (0-7)
  node 0 cpus: 0 1 2 3 7 8 9 14 15 16 17 21 22 23
  node 0 size: 47970 MB
  node 0 free: 47812 MB
  node 1 cpus: 4 5 6 10 11 12 13 18 19 20 24 25 26 27
  node 1 size: 48353 MB
  node 1 free: 48228 MB
  node 2 cpus: 28 29 30 31 35 36 37 42 43 44 45 49 50 51
  node 2 size: 48380 MB
  node 2 free: 48087 MB
  node 3 cpus: 32 33 34 38 39 40 41 46 47 48 52 53 54 55
  node 3 size: 48380 MB

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

### Node 3
- free: 48264 MB

### Node 4
- CPUs: 56 57 58 59 63 64 65 70 71 72 73 77 78 79
- size: 48380 MB
- free: 48252 MB

### Node 5
- CPUs: 60 61 62 66 67 68 69 74 75 76 80 81 82 83
- size: 48380 MB
- free: 48196 MB

### Node 6
- CPUs: 60 61 62 66 67 68 69 74 75 76 80 81 82 83
- size: 48380 MB
- free: 48248 MB

### Node 7
- CPUs: 84 85 86 87 91 92 93 98 99 100 101 105 106 107
- size: 48380 MB
- free: 48283 MB

### Node Distances

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</table>

From `/proc/meminfo`
- MemTotal: 395885732 kB
- HugePages_Total: 0
- Hugepagesize: 2048 kB

```
/usr/bin/lsb_release -d
Red Hat Enterprise Linux release 8.2 (Ootpa)
```

From `/etc/*release* /etc/*version*`
```
os-release:
    NAME="Red Hat Enterprise Linux"
    VERSION="8.2 (Ootpa)"
    ID="rhel"
    ID_LIKE="fedora"
    VERSION_ID="8.2"
    PLATFORM_ID="platform:el8"
    PRETTY_NAME="Red Hat Enterprise Linux 8.2 (Ootpa)"
    ANSI_COLOR="0;31"
redhat-release: Red Hat Enterprise Linux release 8.2 (Ootpa)
system-release: Red Hat Enterprise Linux release 8.2 (Ootpa)
system-release-cpe: cpe:/o:redhat:enterprise_linux:8.2:ga
```

(Continued on next page)
SPEC CPU®2017 Floating Point Rate Result

Lenovo Global Technology
ThinkSystem SR860 V2
(2.60 GHz, Intel Xeon Platinum 8376HL)

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SPECrates:

- SPECrate®2017_fp_base = 548
- SPECrate®2017_fp_energy_base = 676
- SPECrate®2017_fp_peak = 553
- SPECrate®2017_fp_energy_peak = 683

Platform Notes (Continued)

uname -a:
Linux localhost.localdomain 4.18.0-193.el8.x86_64 #1 SMP Fri Mar 27 14:35:58 UTC 2020
x86_64 x86_64 x86_64 GNU/Linux

Kernel self-reported vulnerability status:

- itlb_multihit: Not affected
- CVE-2018-3620 (L1 Terminal Fault): Not affected
- Microarchitectural Data Sampling: Not affected
- CVE-2017-5754 (Meltdown): Not affected
- CVE-2018-3639 (Speculative Store Bypass): Mitigation: Speculative Store Bypass disabled via prctl and seccomp
- CVE-2017-5753 (Spectre variant 1): Mitigation: usercopy/swapgs barriers and __user pointer sanitization
- CVE-2017-5715 (Spectre variant 2): Mitigation: Enhanced IBRS, IBPB: conditional, RSB filling
- tsx_async_abort: Not affected

run-level 3 Oct 25 08:23

SPEC is set to: /home/cpu2017-1.1.0-ic19.1u2

Filesystem Type Size Used Avail Use% Mounted on
/dev/sda3 xfs 892G 49G 843G 6% /

From /sys/devices/virtual/dmi/id

- BIOS: Lenovo M5E107D-1.00 09/16/2020
- Vendor: Lenovo
- Product: ThinkSystem SR860 V2
- Product Family: ThinkSystem
- Serial: none

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.
- Memory:
  - 24x NO DIMM NO DIMM
  - 24x SK Hynix HMA82GR7CJR8N-XN 16 GB 2 rank 3200

(End of data from sysinfo program)
## Lenovo Global Technology

**ThinkSystem SR860 V2**

(2.60 GHz, Intel Xeon Platinum 8376HL)

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### Compiler Version Notes

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<th>Language</th>
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<th>Version Details</th>
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<tbody>
<tr>
<td>C</td>
<td>lbm_r(base, peak), imagick_r(base, peak), nab_r(base, peak)</td>
<td>Intel(R) C Compiler for applications running on Intel(R) 64, Version 19.1.2.275 Build 20200604. Copyright (C) 1985-2020 Intel Corporation. All rights reserved.</td>
</tr>
<tr>
<td>C++</td>
<td>namd_r(base, peak), parest_r(base, peak)</td>
<td>Intel(R) C++ Compiler for applications running on Intel(R) 64, Version 19.1.2.275 Build 20200604. Copyright (C) 1985-2020 Intel Corporation. All rights reserved.</td>
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<tr>
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<td>povray_r(base), blender_r(base, peak)</td>
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### Lenovo Global Technology

ThinkSystem SR860 V2  
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**Compiler Version Notes (Continued)**

Intel C Compiler for applications running on Intel 64, Version 19.1.2.275 Build 20200604  
Copyright (C) 1985-2020 Intel Corporation. All rights reserved.

---

**C++, C**  
511.povray_r(peak)  
---

Intel C++ Compiler for applications running on Intel 64, Version 19.1.2.275 Build 20200623  
Copyright (C) 1985-2020 Intel Corporation. All rights reserved.

---

**C++, C, Fortran**  
507.cactuBSSN_r(base, peak)  
---

Intel C++ Compiler for applications running on Intel 64, Version 19.1.2.275 Build 20200604  
Copyright (C) 1985-2020 Intel Corporation. All rights reserved.

---

**Fortran**  
503.bwaves_r(base, peak) 549.fotonik3d_r(base, peak)  
---

Intel Fortran Compiler for applications running on Intel 64, Version 19.1.2.275 Build 20200623  
Copyright (C) 1985-2020 Intel Corporation. All rights reserved.

---

**Fortran, C**  
521.wrf_r(base) 527.cam4_r(base, peak)  
---

Intel Fortran Compiler for applications running on Intel 64, Version 19.1.2.275 Build 20200623  
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(Continued on next page)
Lenovo Global Technology
ThinkSystem SR860 V2
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Intel(R) C Compiler for applications running on Intel(R) 64, Version 19.1.2.275 Build 20200623
Copyright (C) 1985-2020 Intel Corporation. All rights reserved.

---

**Base Compiler Invocation**

C benchmarks:

icc

(Continued on next page)
**Lenovo Global Technology**

**ThinkSystem SR860 V2**

(2.60 GHz, Intel Xeon Platinum 8376HL)

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

SPEC® CPU®2017 Floating Point Rate Result

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**Base Compiler Invocation (Continued)**

C++ benchmarks:
- icpc

Fortran benchmarks:
- ifort

Benchmarks using both Fortran and C:
- ifort icc

Benchmarks using both C and C++:
- icpc icc

Benchmarks using Fortran, C, and C++:
- icpc icc ifort

**Base Portability Flags**

503.bwaves_r: -DSPEC_LP64  
507.cactuBSSN_r: -DSPEC_LP64  
508.namd_r: -DSPEC_LP64  
510.parest_r: -DSPEC_LP64  
511.povray_r: -DSPEC_LP64  
519.lbm_r: -DSPEC_LP64

521.wrf_r: -DSPEC_LP64 -DSPEC_CASE_FLAG -convert big_endian  
526.blender_r: -DSPEC_LP64 -DSPEC_LINUX -funsigned-char  
527.cam4_r: -DSPEC_LP64 -DSPEC_CASE_FLAG  
538.imagick_r: -DSPEC_LP64  
544.nab_r: -DSPEC_LP64  
549.fotonik3d_r: -DSPEC_LP64  
554.roms_r: -DSPEC_LP64

**Base Optimization Flags**

C benchmarks:
- m64 -mnextgen -std=c11  
- Wl, -plugin-opt=-x86-branches-within-32B-boundaries -Wl,-z,muldefs  
- xCORE-AVX512 -Ofast -ffast-math -flto -mfpmath=sse -funroll-loops  
- qopt-mem-layout-trans=4 -L/usr/local/jemalloc64-5.0.1/lib -ljemalloc

(Continued on next page)
Lenovo Global Technology
ThinkSystem SR860 V2
(2.60 GHz, Intel Xeon Platinum 8376HL)

| SPECrate®2017_fp_base            | 548 |
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**CPU2017 License:** 9017
**Test Sponsor:** Lenovo Global Technology
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**Test Date:** Oct-2020
**Hardware Availability:** Nov-2020
**Software Availability:** Jul-2020

### Base Optimization Flags (Continued)

**C++ benchmarks:**
- `-m64 -qnextgen -Wl,-plugin-opt=-x86-branches-within-32B-boundaries`
- `-Wl,-z,muldefs -xCORE-AVX512 -Ofast -ffast-math -flto -mfpmath=sse`
- `-funroll-loops -qopt-mem-layout-trans=4`
- `-L/usr/local/jemalloc64-5.0.1/lib -ljemalloc`

**Fortran benchmarks:**
- `-m64 -Wl,-plugin-opt=-x86-branches-within-32B-boundaries -Wl,-z,muldefs`
- `-xCORE-AVX512 -O3 -ipo -no-prec-div -qopt-prefetch`
- `-ffinite-math-only -qopt-multiple-gather-scatter-by-shuffles`
- `-qopt-mem-layout-trans=4 -nostandard-realloc-lhs -align array32byte`
- `-auto -mbranches-within-32B-boundaries`
- `-L/usr/local/jemalloc64-5.0.1/lib -ljemalloc`

**Benchmarks using both Fortran and C:**
- `-m64 -qnextgen -std=c11`
- `-Wl,-plugin-opt=-x86-braches-within-32B-boundaries -Wl,-z,muldefs`
- `-xCORE-AVX512 -Ofast -ffast-math -flto -mfpmath=sse -funroll-loops`
- `-qopt-mem-layout-trans=4 -O3 -ipo -no-prec-div -qopt-prefetch`
- `-ffinite-math-only -qopt-multiple-gather-scatter-by-shuffles`
- `-nostandard-realloc-lhs -align array32byte -auto`
- `-mbranches-within-32B-boundaries -L/usr/local/jemalloc64-5.0.1/lib -ljemalloc`

**Benchmarks using both C and C++:**
- `-m64 -qnextgen -std=c11`
- `-Wl,-plugin-opt=-x86-braches-within-32B-boundaries -Wl,-z,muldefs`
- `-xCORE-AVX512 -Ofast -ffast-math -flto -mfpmath=sse -funroll-loops`
- `-qopt-mem-layout-trans=4 -L/usr/local/jemalloc64-5.0.1/lib -ljemalloc`

**Benchmarks using Fortran, C, and C++:**
- `-m64 -qnextgen -std=c11`
- `-Wl,-plugin-opt=-x86-braches-within-32B-boundaries -Wl,-z,muldefs`
- `-xCORE-AVX512 -Ofast -ffast-math -flto -mfpmath=sse -funroll-loops`
- `-qopt-mem-layout-trans=4 -O3 -ipo -no-prec-div -qopt-prefetch`
- `-ffinite-math-only -qopt-multiple-gather-scatter-by-shuffles`
- `-nostandard-realloc-lhs -align array32byte -auto`
- `-mbranches-within-32B-boundaries -L/usr/local/jemalloc64-5.0.1/lib -ljemalloc`
Lenovo Global Technology
ThinkSystem SR860 V2
(2.60 GHz, Intel Xeon Platinum 8376HL)

| SPECrate 2017 fp_base = 548 |
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CPU2017 License: 9017
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Tested by: Lenovo Global Technology
Test Date: Oct-2020
Hardware Availability: Nov-2020
Software Availability: Jul-2020

Peak Compiler Invocation

C benchmarks:
icc

C++ benchmarks:
icpc

Fortran benchmarks:
ifort

Benchmarks using both Fortran and C:
ifort icc

Benchmarks using both C and C++:
icpc icc

Benchmarks using Fortran, C, and C++:
icpc icc ifort

Peak Portability Flags

Same as Base Portability Flags

Peak Optimization Flags

C benchmarks:
519.lbm_r: basepeak = yes
538.imagick_r: basepeak = yes
544.nab_r: basepeak = yes

C++ benchmarks:
508.namd_r: basepeak = yes
510.parest_r: -m64 -qnextgen
-Wl,-plugin-opt=-x86-branches-within-32B-boundaries
-Wl,-z,muldefs -xCORE-AVX512 -Ofast -ffast-math -flto

(Continued on next page)
Lenovo Global Technology

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Test Date: Oct-2020
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Software Availability: Jul-2020

Peak Optimization Flags (Continued)

510.parest_r (continued):
-mfpmath=sse -funroll-loops -qopt-mem-layout-trans=4
-L/usr/local/jemalloc64-5.0.1/lib -ljemalloc

Fortran benchmarks:

503.bwaves_r -m64 -Wl,-plugin-opt=-x86-branches-within-32B-boundaries
-Wl,-z,muldefs -xCORE-AVX512 -O3 -ipo -no-prec-div
-qopt-prefetch -ffinite-math-only
-qopt-multiple-gather-scatter-by-shuffles
-qopt-mem-layout-trans=4 -nostandard-realloc-lhs
-align array32byte -auto -mbranches-within-32B-boundaries
-L/usr/local/jemalloc64-5.0.1/lib -ljemalloc

549.fotonik3d_r: basepeak = yes

554.roms_r: Same as 503.bwaves_r

Benchmarks using both Fortran and C:

521.wrf_r: -prof-gen(pass 1) -prof-use(pass 2) -xCORE-AVX512 -O3
-ipo -no-prec-div -qopt-prefetch -ffinite-math-only
-qopt-multiple-gather-scatter-by-shuffles
-qopt-mem-layout-trans=4 -mbranches-within-32B-boundaries
-nostandard-realloc-lhs -align array32byte -auto
-L/usr/local/jemalloc64-5.0.1/lib -ljemalloc

527.cam4_r: basepeak = yes

Benchmarks using both C and C++:

511.povray_r: -prof-gen(pass 1) -prof-use(pass 2) -xCORE-AVX512 -O3
-ipo -no-prec-div -qopt-prefetch -ffinite-math-only
-qopt-multiple-gather-scatter-by-shuffles
-qopt-mem-layout-trans=4 -mbranches-within-32B-boundaries
-L/usr/local/jemalloc64-5.0.1/lib -ljemalloc

526.blender_r: basepeak = yes

Benchmarks using Fortran, C, and C++:

507.cactuBSSN_r: basepeak = yes
### Lenovo Global Technology

**ThinkSystem SR860 V2**  
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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:  
http://www.spec.org/cpu2017/flags/Intel-ic19.1u1-official-linux64_revA.xml  
http://www.spec.org/cpu2017/flags/Lenovo-Platform-SPECcpu2017-Flags-V1.2-Cooperlake-A.xml

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Originally published on 2020-11-10.