# Lenovo Global Technology

## SPEC CPU®2017 Floating Point Speed Result

**Lenovo Global Technology**  
ThinkSystem SR635  
2.90 GHz, AMD EPYC 7542  

**CPU2017 License:** 9017  
**Test Date:** Feb-2020  
**Test Sponsor:** Lenovo Global Technology  
**Hardware Availability:** Jan-2020  
**Tested by:** Lenovo Global Technology  
**Software Availability:** Dec-2019  

<table>
<thead>
<tr>
<th>Hardware</th>
<th>Software</th>
</tr>
</thead>
<tbody>
<tr>
<td>CPU Name: AMD EPYC 7542</td>
<td>OS: SUSE Linux Enterprise Server 12 SP5 (x86_64)</td>
</tr>
<tr>
<td>Max MHz: 3400</td>
<td>Kernel 4.12.14-120-default</td>
</tr>
<tr>
<td>Nominal: 2900</td>
<td>Compiler: C/C++/Fortran: Version 2.0.0 of AOCC</td>
</tr>
<tr>
<td>Enabled: 32 cores, 1 chip</td>
<td>Parallel: Yes</td>
</tr>
<tr>
<td>Orderable: 1 chip</td>
<td>Firmware: Lenovo BIOS Version CFE107O released Dec-2019</td>
</tr>
<tr>
<td>Cache L1: 32 KB I + 32 KB D on chip per core</td>
<td>File System: xfs</td>
</tr>
<tr>
<td>L2: 512 KB I+D on chip per core</td>
<td>System State: Run level 3 (multi-user)</td>
</tr>
<tr>
<td>L3: 128 MB I+D on chip per chip, 16 MB shared / 4 cores</td>
<td>Base Pointers: 64-bit</td>
</tr>
<tr>
<td>Other: None</td>
<td>Peak Pointers: 64-bit</td>
</tr>
<tr>
<td>Memory: 256 GB (8 x 32 GB 2Rx4 PC4-3200AA-R)</td>
<td>Other: jemalloc: jemalloc memory allocator library v5.1.0</td>
</tr>
<tr>
<td>Storage: 1 x 960 GB SATA SSD</td>
<td>Power Management: BIOS set to prefer performance at the cost of additional power usage</td>
</tr>
<tr>
<td>Other: None</td>
<td></td>
</tr>
</tbody>
</table>

## SPECspeed®2017_fp_base = 108  
**SPECspeed®2017_fp_peak = 109**

### SPECspeed®2017_fp_base Results

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Threads</th>
<th>SPECspeed®2017_fp_base</th>
</tr>
</thead>
<tbody>
<tr>
<td>603.bwaves_s</td>
<td>32</td>
<td>181</td>
</tr>
<tr>
<td>607.cactuBSSN_s</td>
<td>32</td>
<td>181</td>
</tr>
<tr>
<td>619.lbm_s</td>
<td>32</td>
<td>28.5</td>
</tr>
<tr>
<td>621.wrf_s</td>
<td>32</td>
<td>138</td>
</tr>
<tr>
<td>627.cam4_s</td>
<td>32</td>
<td>74.9</td>
</tr>
<tr>
<td>628.pop2_s</td>
<td>32</td>
<td>69.7</td>
</tr>
<tr>
<td>638.imagick_s</td>
<td>32</td>
<td>154</td>
</tr>
<tr>
<td>644.nab_s</td>
<td>32</td>
<td>204</td>
</tr>
<tr>
<td>649.fotonik3d_s</td>
<td>32</td>
<td>58.4</td>
</tr>
<tr>
<td>654.roms_s</td>
<td>32</td>
<td>117</td>
</tr>
</tbody>
</table>

### SPECspeed®2017_fp_peak Results

<table>
<thead>
<tr>
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<th>SPECspeed®2017_fp_peak</th>
</tr>
</thead>
<tbody>
<tr>
<td>603.bwaves_s</td>
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<td>108</td>
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### Results Table

<table>
<thead>
<tr>
<th>Benchmark</th>
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<th>Seconds</th>
<th>Ratio</th>
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<tr>
<td>607.cactuBSSN_s</td>
<td>32</td>
<td>92.0</td>
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<td>138</td>
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**SPECspeed®2017_fp_base = 108**

**SPECspeed®2017_fp_peak = 109**

Results appear in the order in which they were run. Bold underlined text indicates a median measurement.

### Compiler Notes

The AMD64 AOCC Compiler Suite is available at http://developer.amd.com/amd-aocc/

### Submit Notes

The config file option 'submit' was used. 'numactl' was used to bind copies to the cores. See the configuration file for details.

### Operating System Notes

'ulimit -s unlimited' was used to set environment stack size
'ulimit -l 2097152' was used to set environment locked pages in memory limit

runcpu command invoked through numactl i.e.:
numactl --interleave=all runcpu <etc>

Set dirty_ratio=8 to limit dirty cache to 8% of memory
Set swappiness=1 to swap only if necessary
Set zone_reclaim_mode=1 to free local node memory and avoid remote memory sync then drop_caches=3 to reset caches before invoking runcpu
dirty_ratio, swappiness, zone_reclaim_mode and drop_caches were all set using privileged echo (e.g. echo 1 > /proc/sys/vm/swappiness).

Transparent huge pages set to 'always' for this run (OS default)
**Environment Variables Notes**

Environment variables set by runcpu before the start of the run:
- `GOMP_CPU_AFFINITY = "0-31"
- `LD_LIBRARY_PATH = 
  "/home/cpu2017-1.1.0-amd-rome-aocc200-C3/amd_speed_aocc200_rome_C_lib/64 
  ;/home/cpu2017-1.1.0-amd-rome-aocc200-C3/amd_speed_aocc200_rome_C_lib/32 
  ;"
- `MALLOC_CONF = "retain:true"
- `OMP_DYNAMIC = "false"
- `OMP_SCHEDULE = "static"
- `OMP_STACKSIZE = "128M"
- `OMP_THREAD_LIMIT = "32"

Environment variables set by runcpu during the 607.cactuBSSN_s peak run:
- `GOMP_CPU_AFFINITY = "0-31"

Environment variables set by runcpu during the 619.lbm_s peak run:
- `GOMP_CPU_AFFINITY = "0 16 17 2 18 3 19 4 20 5 21 6 22 7 23 8 24 9 25 10 26 
  11 27 12 28 13 29 14 30 15 31"

Environment variables set by runcpu during the 628.pop2_s peak run:
- `GOMP_CPU_AFFINITY = "0-31"

Environment variables set by runcpu during the 649.fotonik3d_s peak run:
- `GOMP_CPU_AFFINITY = "0-31"

Environment variables set by runcpu during the 654.roms_s peak run:
- `GOMP_CPU_AFFINITY = "0-31"

**General Notes**

Binaries were compiled on a system with 2x AMD EPYC 7601 CPU + 512GB Memory using Fedora 26

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.
jemalloc: configured and built with GCC v9.1.0 in Ubuntu 19.04 with -O3 -znver2 -flto
jemalloc 5.1.0 is available here:
https://github.com/jemalloc/jemalloc/releases/download/5.1.0/jemalloc-5.1.0.tar.bz2
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SPECspeed®2017_fp_peak = 109

Platform Notes

BIOS settings:
Set Operating Mode set to Maximum Performance
SMT Mode set to Disabled

Sysinfo program /home/cpu2017-1.1.0-amd-rome-aocc200-C3/bin/sysinfo
Rev: r6365 of 2019-08-21 295195f888a3d7edbe1e6e46a485a0011
running on linux-4au0 Wed Feb 26 19:42:44 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 : AMD EPYC 7542 32-Core Processor
  1 "physical id"s (chips)
  32 "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 : 32
siblings : 32
physical 0: cores 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31

From lscpu:
Architecture:        x86_64
CPU op-mode(s):      32-bit, 64-bit
Byte Order:          Little Endian
Address sizes:       43 bits physical, 48 bits virtual
CPU(s):              32
On-line CPU(s) list: 0-31
Thread(s) per core:  1
Core(s) per socket:  32
Socket(s):           1
NUMA node(s):        1
Vendor ID:           AuthenticAMD
CPU family:          23
Model:               49
Model name:          AMD EPYC 7542 32-Core Processor
Stepping:            0
CPU MHz:             2900.000
CPU max MHz:         2900.0000
CPU min MHz:         1500.0000
BogoMIPS:            5789.13
Virtualization:      AMD-V
L1d cache:           32K
L1i cache:           32K
L2 cache:            512K

(Continued on next page)
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Test Date: Feb-2020
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SPECspeed®2017_fp_base = 108
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Platform Notes (Continued)

L3 cache: 16384K
NUMA node0 CPU(s): 0-31
Flags: fpu vme de pse tsc msr pae mce cx8 apic sep mtrr pge mca cmov
pat pse36 clflush mmx fxsr sse sse2 ht syscall nx mmxext fxsr_opt pdpe1gb rdtscp lm
constant_tsc rep_good nonstop_tsc cpuid extd_apicid aperfmperf pni pclmulqdq
monitor ssse3 fma cx16 sse4_1 sse4_2 movbe popcnt aes xsave avx f16c rdrand lahf_lm
cmp_legacy svm extapic cr8_legacy abm sse4a misalignsse 3dnowprefetch oswv ibs
skinit wdt tce topoext perfctr_core perfctr_nb bpltex perfctr_l2 mwaitx cpb cat_l3
cdp_l3 hw_pstate smm sbb dev brb ibrs ibpb stibp vmmcall fgsgbase bmi1 avx2 smep bmi2
cqm rdrt_a rdseed adx smap clflushopt clwb sha_ni xsaveopt xsavex xgetbv v xsave xsave
atmant lbv svm_lock nirp_save tsc_scale vmbcb_clean flushbyasid decodeassist
pausefilter pfthreshold avic v_vmca save_vmload vgif umip rdpid overflow_recov succor
smca

/proc/cpuinfo cache data
cache size : 512 KB

From numactl --hardware WARNING: a numactl 'node' might or might not correspond to a
physical chip.
available: 1 nodes (0)
node 0 cpus: 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27
28 29 30 31
node 0 size: 257759 MB
node 0 free: 257009 MB
node distances:
node 0: 10

From /proc/meminfo
MemTotal: 263945808 kB
HugePages_Total: 0
Hugepagesize: 2048 kB

From /etc/*release* /etc/*version*
SuSE-release:
SUSE Linux Enterprise Server 12 (x86_64)
VERSION = 12
PATCHLEVEL = 5
# 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-SP5"
VERSION_ID="12.5"
PRETTY_NAME="SUSE Linux Enterprise Server 12 SP5"
ID="sles"

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Platform Notes (Continued)

ANSI_COLOR="0;32"
CPE_NAME="cpe:/o:suse:sles:12:sp5"

uname -a:
Linux linux-4au0 4.12.14-120-default #1 SMP Thu Nov 7 16:39:09 UTC 2019 (fd9dc36)
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: Full AMD retpoline, IBPB: conditional, IBRS_FW, STIBF: disabled, RSB filling

tsx_async_abort: Not affected
run-level 3 Feb 26 19:38

SPEC is set to: /home/cpu2017-1.1.0-amd-rome-aocc200-C3
Filesystem Type Size Used Avail Use% Mounted on
/dev/sda2 xfs 893G 52G 841G 6% /

From /sys/devices/virtual/dmi/id
BIOS: Lenovo CFE1070 12/28/2019
Vendor: Lenovo
Product: ThinkSystem SR635 -[7Y00000000]-
Product Family: ThinkSystem
Serial: 0123456789

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:
8x Samsung M393A4K40DB2-CWE 32 kB 2 rank 3200
8x Unknown Unknown

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

**ThinkSystem SR635**  
*2.90 GHz, AMD EPYC 7542*

<table>
<thead>
<tr>
<th>Specification</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>SPECspeed®2017_fp_base</strong></td>
<td>108</td>
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<tr>
<td><strong>SPECspeed®2017_fp_peak</strong></td>
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### Compiler Version Notes

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**C**  
619.lbm_s(base, peak) 638.imagick_s(base, peak) 644.nab_s(base, peak)

---

AOCCLLVM.2.0.0.B191.2019_07_19 clang version 8.0.0 (CLANG: Jenkins  
AOCCLLVM.2.0.0.B191.2019_07_19)  
Target: x86_64-unknown-linux-gnu  
Thread model: posix  
InstalledDir: /sppo/dev/compilers/aocc-compiler-2.0.0/bin

---

**C++, C, Fortran**  
607.cactuBSSN_s(base, peak)

---

AOCCLLVM.2.0.0.B191.2019_07_19 clang version 8.0.0 (CLANG: Jenkins  
AOCCLLVM.2.0.0.B191.2019_07_19)  
Target: x86_64-unknown-linux-gnu  
Thread model: posix  
InstalledDir: /sppo/dev/compilers/aocc-compiler-2.0.0/bin

---

**Fortran**  
603.bwaves_s(base, peak) 649.fotonik3d_s(base, peak) 654.roms_s(base, peak)

---

AOCCLLVM.2.0.0.B191.2019_07_19 clang version 8.0.0 (CLANG: Jenkins  
AOCCLLVM.2.0.0.B191.2019_07_19)  
Target: x86_64-unknown-linux-gnu  
Thread model: posix  
InstalledDir: /sppo/dev/compilers/aocc-compiler-2.0.0/bin

---

**Fortran, C**  
621.wrf_s(base, peak) 627.cam4_s(base, peak) 628.pop2_s(base, peak)

---

AOCCLLVM.2.0.0.B191.2019_07_19 clang version 8.0.0 (CLANG: Jenkins

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Compiler Version Notes (Continued)

AOCC_2.0.0-Build#191) (based on LLVM AOCC.LLVM.2.0.0.B191.2019_07_19)
Target: x86_64-unknown-linux-gnu
Thread model: posix
InstalledDir: /sppo/dev/compilers/aocc-compiler-2.0.0/bin
AOCC.LLVM.2.0.0.B191.2019_07_19 clang version 8.0.0 (CLANG: Jenkins
AOCC_2.0.0-Build#191) (based on LLVM AOCC.LLVM.2.0.0.B191.2019_07_19)
Target: x86_64-unknown-linux-gnu
Thread model: posix
InstalledDir: /sppo/dev/compilers/aocc-compiler-2.0.0/bin

Base Compiler Invocation

C benchmarks:
clang

Fortran benchmarks:
flang

Benchmarks using both Fortran and C:
flang clang

Benchmarks using Fortran, C, and C++:
clang++ clang flang

Base Portability Flags

603.bwaves_s: -DSPEC_LP64
607.cactuBSSN_s: -DSPEC_LP64
619.lbm_s: -DSPEC_LP64
621.wrf_s: -DSPEC_CASE_FLAG -Mbyteswapio -DSPEC_LP64
627.cam4_s: -DSPEC_CASE_FLAG -DSPEC_LP64
628.pop2_s: -DSPEC_CASE_FLAG -Mbyteswapio -DSPEC_LP64
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:
- flto -Wl,-mllvm -Wl,-function-specialize
- Wl,-mllvm -Wl,-region-vectorize -Wl,-mllvm -Wl,-vector-library=LIBMVEC
- Wl,-mllvm -Wl,-reduce-array-computations=3 -O3 -ffast-math
- march=znver2 -fstruct-layout=3 -mllvm -unroll-threshold=50
- fremap-arrays -mllvm -function-specialize -mllvm -enable-gvn-hoist
- mllvm -reduce-array-computations=3 -mllvm -global-vectorize-slp
- mllvm -vector-library=LIBMVEC -mllvm -inline-threshold=1000
- flv-function-specialization -z muldefs -DSPEC_OPENMP -fopenmp
- fopenmp=libomp -lomp -lpthread -luid -lmvec -lamdlibm -ljemalloc -lflang

Fortran benchmarks:
- flto -Wl,-mllvm -Wl,-function-specialize
- Wl,-mllvm -Wl,-region-vectorize -Wl,-mllvm -Wl,-vector-library=LIBMVEC
- Wl,-mllvm -Wl,-reduce-array-computations=3 -O3 -March=znver2
- funroll-loops -Mrecursive -mllvm -vector-library=LIBMVEC -z muldefs
- Kieee -fno-finite-math-only -DSPEC_OPENMP -fopenmp -fopenmp=libomp
- lomp -lpthread -luid -lmvec -lamdlibm -ljemalloc -lflang

Benchmarks using both Fortran and C:
- flto -Wl,-mllvm -Wl,-function-specialize
- Wl,-mllvm -Wl,-region-vectorize -Wl,-mllvm -Wl,-vector-library=LIBMVEC
- Wl,-mllvm -Wl,-reduce-array-computations=3 -O3 -ffast-math
- march=znver2 -fstruct-layout=3 -mllvm -unroll-threshold=50
- fremap-arrays -mllvm -function-specialize -mllvm -enable-gvn-hoist
- mllvm -reduce-array-computations=3 -mllvm -global-vectorize-slp
- mllvm -vector-library=LIBMVEC -mllvm -inline-threshold=1000
- flv-function-specialization -funroll-loops -Mrecursive -z muldefs
- Kieee -fno-finite-math-only -DSPEC_OPENMP -fopenmp -fopenmp=libomp
- lomp -lpthread -luid -lmvec -lamdlibm -ljemalloc -lflang

Benchmarks using Fortran, C, and C++:
- std=c++98 -flto -Wl,-mllvm -Wl,-function-specialize
- Wl,-mllvm -Wl,-region-vectorize -Wl,-mllvm -Wl,-vector-library=LIBMVEC
- Wl,-mllvm -Wl,-reduce-array-computations=3
- Wl,-mllvm -Wl,-supress-fmas -O3 -ffast-math -March=znver2
- fstruct-layout=3 -mllvm -unroll-threshold=50 -fremap-arrays
- mllvm -function-specialize -mllvm -enable-gvn-hoist
- mllvm -reduce-array-computations=3 -mllvm -global-vectorize-slp
- mllvm -vector-library=LIBMVEC -mllvm -inline-threshold=1000
- flv-function-specialization -mllvm -loop-unswitch-threshold=200000
- mllvm -unroll-threshold=100 -mllvm -enable-partial-unswitch
- funroll-loops -Mrecursive -z muldefs -Kieee -fno-finite-math-only
- DSPEC_OPENMP -fopenmp -fopenmp=libomp -lomp -lpthread -luid -lmvec
- lamdlibm -ljemalloc -lflang
**Lenovo Global Technology**

ThinkSystem SR635  
2.90 GHz, AMD EPYC 7542

<table>
<thead>
<tr>
<th>SPECspeed®2017_fp_base = 108</th>
<th>SPECspeed®2017_fp_peak = 109</th>
</tr>
</thead>
</table>

**CPU2017 License:** 9017  
**Test Sponsor:** Lenovo Global Technology  
**Tested by:** Lenovo Global Technology  
**Test Date:** Feb-2020  
**Hardware Availability:** Jan-2020  
**Software Availability:** Dec-2019

### Base Other Flags

- C benchmarks:  
  -Wno-return-type

- Fortran benchmarks:  
  -Wno-return-type

- Benchmarks using both Fortran and C:  
  -Wno-return-type

- Benchmarks using Fortran, C, and C++:  
  -Wno-return-type

### Peak Compiler Invocation

- C benchmarks:  
  clang

- Fortran benchmarks:  
  flang

- Benchmarks using both Fortran and C:  
  flang clang

- Benchmarks using Fortran, C, and C++:  
  clang++ clang flang

### Peak Portability Flags

Same as Base Portability Flags

### Peak Optimization Flags

C benchmarks:

- 619.lbm_s: -flto -Wl,-mllvm -Wl,-function-specialize  
  -Wl,-mllvm -Wl,-region-vectorize  
  -Wl,-mllvm -Wl,-vector-library=LIBMVEC  
  -Wl,-mllvm -Wl,-reduce-array-computations=3 -Ofast  
  -march=znver2 -mno-sse4a -fstruct-layout=5  
  -mllvm -vectorize-memory-aggressively

(Continued on next page)
Peak Optimization Flags (Continued)

619.lbm_s (continued):
-mlirn -function-specialize -mlirn -enable-gvn-hoist
-mlirn -unroll-threshold=50 -fremap-arrays
-mlirn -vector-library=LIBMVEC
-mlirn -reduce-array-computations=3
-mlirn -global-vectorize-slp -mlirn -inline-threshold=1000
-flv-function-specialization -DSPEC_OPENMP -fopenmp
-lmvec -lamdlibm -fopenmp=libomp -lomp -lpthread -ldl
-ljemalloc -lf Lang

638.imagick_s: basepeak = yes

644.nab_s: basepeak = yes

Fortran benchmarks:

649.fotonik3d_s: -flto -Wl,-mlirn -Wl,-region-vectorize
-Wl,-mlirn -Wl,-vector-library=LIBMVEC
-Wl,-mlirn -Wl,-reduce-array-computations=3 -03
-march=znver2 -funroll-loops -Mrecursive
-mlirn -vector-library=LIBMVEC -Kieee
-fno-finite-math-only -DSPEC_OPENMP -fopenmp
-fopenmp=libomp -lomp -lpthread -ldl -lmvec -lamdlibm
-ljemalloc -lf Lang

654.roms_s: -flto -Wl,-mlirn -Wl,-region-vectorize
-Wl,-mlirn -Wl,-vector-library=LIBMVEC
-Wl,-mlirn -Wl,-reduce-array-computations=3
-Wl,-mlirn -Wl,-enable-X86-prefetching -03 -march=znver2
-funroll-loops -Mrecursive -mlirn -vector-library=LIBMVEC
-Kieee -fno-finite-math-only -DSPEC_OPENMP -fopenmp
-fopenmp=libomp -lomp -lpthread -ldl -lmvec -lamdlibm
-ljemalloc -lf Lang

Benchmarks using both Fortran and C:

621.wrf_s: basepeak = yes

627.cam4_s: basepeak = yes

628.pop2_s: -flto -Wl,-mlirn -Wl,-function-specialize
-Wl,-mlirn -Wl,-region-vectorize
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Peak Optimization Flags (Continued)

628.pop2_s (continued):
-Wl,-mlllvm -Wl,-vector-library=LIBMVEC
-Wl,-mlllvm -Wl,-reduce-array-computations=3 -Ofast
-march=znver2 -mno-sse4a -fstruct-layout=5
-mlllvm -vectorize-memory-aggressively
-mlllvm -function-specialize -mlllvm -enable-gvn-hoist
-mlllvm -unroll-threshold=50 -fremap-arrays
-mlllvm -vector-library=LIBMVEC
-mlllvm -reduce-array-computations=3
-mlllvm -global-vectorize-slp -mlllvm -inline-threshold=1000
-flv-function-specialization -O3 -funroll-loops
-Mrecursive -Kieee -fno-finite-math-only -DSPEC_OPENMP
-fopenmp -fopenmp=libomp -lomp -lpthread -ldl -lmvec
-lamdlibm -ljemalloc -lflang

Benchmarks using Fortran, C, and C++:
-std=c++98 -f1to -Wl,-mlllvm -Wl,-function-specialize
-Wl,-mlllvm -Wl,-region-vectorize -Wl,-mlllvm -Wl,-vector-library=LIBMVEC
-Wl,-mlllvm -Wl,-reduce-array-computations=3 -Ofast -march=znver2
-mno-sse4a -fstruct-layout=5 -mlllvm -vectorize-memory-aggressively
-mlllvm -function-specialize -mlllvm -enable-gvn-hoist
-mlllvm -unroll-threshold=50 -fremap-arrays
-mlllvm -vector-library=LIBMVEC -mlllvm -reduce-array-computations=3
-mlllvm -global-vectorize-slp -mlllvm -inline-threshold=1000
-flv-function-specialization -mlllvm -unroll-threshold=100
-mlllvm -enable-partial-unswitch -mlllvm -loop-unswitch-threshold=200000
-O3 -funroll-loops -Mrecursive -Kieee -fno-finite-math-only
-DSPEC_OPENMP -fopenmp -fopenmp=libomp -lomp -lpthread -ldl -lmvec
-lamdlibm -ljemalloc -lflang

Peak Other Flags

C benchmarks:
-Wno-return-type

Fortran benchmarks:
-Wno-return-type

Benchmarks using both Fortran and C:
-Wno-return-type

Benchmarks using Fortran, C, and C++:
-Wno-return-type
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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-Rome-E.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-Rome-E.xml

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Tested with SPEC CPU®2017 v1.1.0 on 2020-02-26 06:42:43-0500.
Report generated on 2020-03-31 14:57:10 by CPU2017 PDF formatter v6255.
Originally published on 2020-03-31.