Lenovo Global Technology
ThinkSystem SR665
2.80 GHz, AMD EPYC 7282

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

600.perlbench_s
602.gcc_s
605.mcf_s
620.omnetpp_s
623.xalancbmk_s
625.x264_s
631.deepsjeng_s
641.leela_s
648.exchange2_s
657.xz_s

Threads

<table>
<thead>
<tr>
<th>Task</th>
<th>32 Threads</th>
<th>8 Threads</th>
<th>SPECspeed2017_int_base</th>
<th>SPECspeed2017_int_peak</th>
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<tbody>
<tr>
<td>600.perlbench_s</td>
<td>4.59</td>
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<td>8.92</td>
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<td>623.xalancbmk_s</td>
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<tr>
<td>648.exchange2_s</td>
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<td></td>
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</tr>
<tr>
<td>657.xz_s</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Hardware
CPU Name: AMD EPYC 7282
Max MHz: 3200
Nominal: 2800
Enabled: 32 cores, 2 chips, 2 threads/core
Orderable: 1.2 chips
Cache L1: 32 KB I + 32 KB D on chip per core
L2: 512 KB I+D on chip per core
L3: 64 MB I+D on chip per chip,
    16 MB shared / 4 cores
Other: None
Memory: 1 TB (32 x 32 GB 2Rx8 PC4-3200AA-R)
Storage: 1 x 960 GB SATA SSD
Other: None

Software
OS: Red Hat Enterprise Linux 8.1 (Ootpa)
Kernel 4.18.0-147.el8.x86_64
Compiler: C/C++/Fortran: Version 2.0.0 of AOCC
Parallel: Yes
Firmware: Lenovo BIOS Version D8E105P 1.00 released May-2020
File System: xfs
System State: Run level 3 (multi-user)
Base Pointers: 64-bit
Peak Pointers: 32/64-bit
Other: jemalloc: jemalloc memory allocator library v5.1.0
Power Management: BIOS set to prefer performance at the cost of additional power usage
## Lenovo Global Technology

**ThinkSystem SR665**  
2.80 GHz, AMD EPYC 7282

---

**CPU2017 License:** 9017  
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**Tested by:** Lenovo Global Technology  
**Test Date:** Jun-2020  
**Hardware Availability:** Jun-2020  
**Software Availability:** Nov-2019

---

### Results Table

<table>
<thead>
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<th>Threads</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Seconds</th>
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<th>Seconds</th>
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<th>Seconds</th>
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<tbody>
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<td>445</td>
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<td>186</td>
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<td>318</td>
<td>19.4</td>
<td>316</td>
<td>19.5</td>
<td>318</td>
</tr>
</tbody>
</table>

### 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)
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SPECspeed®2017_int_base = 8.35
SPECspeed®2017_int_peak = 8.55

Environment Variables Notes

Environment variables set by runcpu before the start of the run:
GOMP_CPU_AFFINITY = "0-63"
LD_LIBRARY_PATH =
    "/home/cpu2017-1.1.0-amd-rome-aocce200-C1/amd_speed_aocce200_rome_C_lib/64
    ;/home/cpu2017-1.1.0-amd-rome-aocce200-C1/amd_speed_aocce200_rome_C_lib/32
"
MALLOCS_CONF = "retain:true"
OMP_DYNAMIC = "false"
OMP_SCHEDULE = "static"
OMP_STACKSIZE = "128M"
OMP_THREAD_LIMIT = "64"

Environment variables set by runcpu during the 600.perlbench_s peak run:
GOMP_CPU_AFFINITY = "0"

Environment variables set by runcpu during the 602.gcc_s peak run:
GOMP_CPU_AFFINITY = "0"

Environment variables set by runcpu during the 605.mcf_s peak run:
GOMP_CPU_AFFINITY = "0"

Environment variables set by runcpu during the 623.xalancbmk_s peak run:
GOMP_CPU_AFFINITY = "0"
OMP_STACKSIZE = "128M"

Environment variables set by runcpu during the 625.x264_s peak run:
GOMP_CPU_AFFINITY = "0"

Environment variables set by runcpu during the 631.deepsjeng_s peak run:
GOMP_CPU_AFFINITY = "0"

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.
jemalloc: configured and built with GCC v9.1.0 in Ubuntu 19.04 with -O3 -znver2 -flto
ejemalloc 5.1.0 is available here:
https://github.com/jemalloc/jemalloc/releases/download/5.1.0/jemalloc-5.1.0.tar.bz2
 SPEC CPU®2017 Integer Speed Result  

Lenovo Global Technology  
ThinkSystem SR665  
2.80 GHz, AMD EPYC 7282

SPECspeed®2017_int_base = 8.35  
SPECspeed®2017_int_peak = 8.55

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

Test Date: Jun-2020  
Hardware Availability: Jun-2020  
Software Availability: Nov-2019

Platform Notes

BIOS settings:
Choose Operating Mode set to Maximum Performance and then set it to Custom Mode

Sysinfo program /home/cpu2017-1.1.0-amd-rome-aocc200-C1/bin/sysinfo
Rev: r6365 of 2019-08-21 295195f888a3d7edbie6e46a485a0011
running on localhost.localdomain Wed Jun 24 09:03:12 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 7282 16-Core Processor
  2 "physical id"s (chips)
  64 "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 : 16
siblings : 32
physical 0: cores 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15
physical 1: cores 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15

From lscpu:
Architecture: x86_64
CPU op-mode(s): 32-bit, 64-bit
Byte Order: Little Endian
CPU(s): 64
On-line CPU(s) list: 0-63
Thread(s) per core: 2
Core(s) per socket: 16
Socket(s): 2
NUMA node(s): 2
Vendor ID: AuthenticAMD
CPU family: 23
Model: 49
Model name: AMD EPYC 7282 16-Core Processor
Stepping: 0
CPU MHz: 1919.477
CPU max MHz: 2800.0000
CPU min MHz: 1500.0000
BogoMIPS: 5589.88
Virtualization: AMD-V
L1d cache: 32K
L1i cache: 32K
L2 cache: 512K
L3 cache: 16384K
NUMA node0 CPU(s): 0-15,32-47

(Continued on next page)
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SPECspeed®2017_int_base = 8.35
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Platform Notes (Continued)

NUMA node1 CPU(s): 16-31,48-63
Flags:
fpu vme de pse tsc msr pae mce cx8 apa 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 nopl xtopology nonstop_tsc cpuid extd_apicid aperfmperf pni
pclmulqdq monitor ssse3 fma cx16 sse4_1 sse4_2 movbe popcnt aes xsave avx f16c
rdand lahf_lm cmp_legacy svm extapic cr8_legacy abm sse4a misalignsse 3dnowprefetch
osvw ibs kinit wdt tce topoexit perfctr_core perfctr_nb bpeext perfctr_llc mwaitx cpx
ctl13 cdpl13 hw_pstate sme ssbd mba sev ibrs ibpb stibp vmmcall fsgsbase bmi1 avx2
smep bmi2 cqm rdt_a rdseed adx smap clflushopt clwb sha ni xsaveopt xsave xgetbv1
xsave cqm_llc cqm_occup_llc cqm_mbb_total cqm_mbb_local czero icperf xsaveerptr
wbnoinvd arat lbrv svm_lock nrip_save tsc_scale vmcb_clean flushbyasid
decodeassists pausefilter pfthreshold avic v_vmsave_vmload vgif umip rdpbg
overflow_recov succor smca

/problem/cpuinfo cache data
  cache size : 512 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 12 13 14 15 32 33 34 35 36 37 38 39 40 41 42 43
        44 45 46 47
    node 0 size: 515857 MB
    node 0 free: 515448 MB
    node 1 cpus: 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 48 49 50 51 52 53 54 55 56
        57 58 59 60 61 62 63
    node 1 size: 516088 MB
    node 1 free: 515262 MB
    node distances:
      node 0 1
        0: 10 32
        1: 32 10

From /proc/meminfo
  MemTotal: 1056711992 kB
  HugePages_Total: 0
  Hugepagesize: 2048 kB

From /etc/*release* /etc/*version*
  os-release:
    NAME="Red Hat Enterprise Linux"
    VERSION="8.1 (Ootpa)"
    ID="rhel"
    ID_LIKE="fedora"
    VERSION_ID="8.1"
    PLATFORM_ID="platform:el8"
    PRETTY_NAME="Red Hat Enterprise Linux 8.1 (Ootpa)"

(Continued on next page)
Lenovo Global Technology
ThinkSystem SR665
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SPECspec®2017_int_base = 8.35
SPECspec®2017_int_peak = 8.55

Platform Notes (Continued)

ANSI_COLOR="0;31"
redhat-release: Red Hat Enterprise Linux release 8.1 (Ootpa)
system-release: Red Hat Enterprise Linux release 8.1 (Ootpa)
system-release-cpe: cpe:/o:redhat:enterprise_linux:8.1:ga

uname -a:
  Linux localhost.localdomain 4.18.0-147.el8.x86_64 #1 SMP Thu Sep 26 15:52:44 UTC 2019
  x86_64 x86_64 x86_64 GNU/Linux

Kernel self-reported vulnerability status:

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 sanitation
CVE-2017-5715 (Spectre variant 2): Mitigation: Full AMD retpoline, IBPB: conditional, IBRS_FW, STIBP: conditional, RSB filling
run-level 3 Jun 24 08:56

SPEC is set to: /home/cpu2017-1.1.0-amd-rome-aocc200-C1
Filesystem Type Size Used Avail Use% Mounted on
/dev/sdb2 xfs 838G 57G 782G 7% /home

From /sys/devices/virtual/dmi/id
BIOS: Lenovo D8E105P-1.00 05/08/2020
Vendor: Lenovo
Product: ThinkSystem SR665 MB
Product Family: ThinkSystem
Serial: 1234567890

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:
  32x Samsung M393A4G43AB3-CWE 32 kB 2 rank 3200

(End of data from sysinfo program)
This system support 16 DIMMs per processor, total 32 DIMMs.
32 DIMM slots installed with 32 GB DIMM for this run.
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SPECSPEED®2017_INT_BASE = 8.35
SPECSPEED®2017_INT_PEAK = 8.55

Test Date: Jun-2020
Hardware Availability: Jun-2020
Software Availability: Nov-2019

Compiler Version Notes

==============================================================================
C | 600.perlbench_s(base, peak) 602.gcc_s(base, peak) 605.mcf_s(base, peak) 625.x264_s(base, peak) 657.xz_s(base, peak)
==============================================================================
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

==============================================================================
C++ | 623.xalancbmk_s(peak)
==============================================================================
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: i386-unknown-linux-gnu
Thread model: posix
InstalledDir: /sppo/dev/compilers/aocc-compiler-2.0.0/bin

==============================================================================
C++ | 620.omnetpp_s(base, peak) 623.xalancbmk_s(base) 631.deepsjeng_s(base, peak) 641.leela_s(base, peak)
==============================================================================
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)
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(Continued on next page)
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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

---

### Base Compiler Invocation

**C benchmarks:**  
clang

**C++ benchmarks:**  
clang++

**Fortran benchmarks:**  
flang

---

### Base Portability Flags

- 600.perlbench_s: `-DSPEC_LINUX_X64 -DSPEC_LP64`
- 602.gcc_s: `-DSPEC_LP64`
- 605.mcf_s: `-DSPEC_LP64`
- 620.omnetpp_s: `-DSPEC_LP64`
- 623.xalancbmk_s: `-DSPEC_LINUX -DSPEC_LP64`
- 625.x264_s: `-DSPEC_LP64`
- 631.deepsjeng_s: `-DSPEC_LP64`
- 641.leela_s: `-DSPEC_LP64`
- 648.exchange2_s: `-DSPEC_LP64`
- 657.xz_s: `-DSPEC_LP64`
## Lenovo Global Technology

### ThinkSystem SR665

2.80 GHz, AMD EPYC 7282

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<tr>
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<th>9017</th>
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<td>Lenovo Global Technology</td>
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</table>

### SPEC CPU®2017 Integer Speed Result

<table>
<thead>
<tr>
<th>SPECspeed®2017_int_base</th>
<th>8.35</th>
</tr>
</thead>
<tbody>
<tr>
<td>SPECspeed®2017_int_peak</td>
<td>8.55</td>
</tr>
</tbody>
</table>

### Base Optimization Flags

**C benchmarks:**
- `-fto -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`
- `-DUSE_OPENMP -fopenmp=libomp -lomp -lpthread -ldl -lmvec -lamdlibm -ljemalloc -lflang`

**C++ benchmarks:**
- `-fto -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,-suppress-fmas -O3 -ffast-math -march=znver2`
- `-mllvm -loop-unswitch-threshold=200000 -mllvm -vector-library=LIBMVEC`
- `-mllvm -unroll-threshold=100 -flv-function-specialization`
- `-mllvm -enable-partial-unswitch -z muldefs -DSPEC_OPENMP -fopenmp`
- `-DUSE_OPENMP -fopenmp=libomp -lomp -lpthread -ldl -lmvec -lamdlibm -ljemalloc -lflang`

**Fortran benchmarks:**
- `-fto -Wl,-mllvm -Wl,-function-specialize`
- `-Wl,-mllvm -Wl,-region-vectorize -Wl,-mllvm -Wl,-vector-library=LIBMVEC`
- `-Wl,-mllvm -Wl,-reduce-array-computations=3 -ffast-math`
- `-Wl,-mllvm -Wl,-inline-recursion=4 -Wl,-mllvm -Wl,-isr-in-nested-loop`
- `-Wl,-mllvm -Wl,-enable-iv-split -O3 -march=znver2 -funroll-loops`
- `-Mrecursive -mllvm -vector-library=LIBMVEC -z muldefs`
- `-mllvm -disable-indvar-simplify -mllvm -unroll-aggressive`
- `-mllvm -unroll-threshold=150 -DSPEC_OPENMP -fopenmp -DUSE_OPENMP -fopenmp=libomp -lomp -lpthread -ldl -lmvec -lamdlibm -ljemalloc -lflang`

### Base Other Flags

**C benchmarks:**
- `-Wno-return-type`

**C++ benchmarks:**
- `-Wno-return-type`

(Continued on next page)
Base Other Flags (Continued)

Fortran benchmarks:
-Wno-return-type

Peak Compiler Invocation

C benchmarks:
clang

C++ benchmarks:
clang++

Fortran benchmarks:
flang

Peak Portability Flags

600.perlbench_s: -DSPEC_LINUX_X64 -DSPEC_LP64
602.gcc_s: -DSPEC_LP64
605.mcf_s: -DSPEC_LP64
620.omnetpp_s: -DSPEC_LP64
623.xalancbmk_s: -DSPEC_LINUX -D_FILE_OFFSET_BITS=64
625.x264_s: -DSPEC_LP64
631.deepsjeng_s: -DSPEC_LP64
641.leela_s: -DSPEC_LP64
648.exchange2_s: -DSPEC_LP64
657.xz_s: -DSPEC_LP64

Peak Optimization Flags

C benchmarks:

600.perlbench_s: -flto -Wl,-mlllvm -Wl,-function-specialize
-Wl,-mlllvm -Wl,-region-vectorize
-Wl,-mlllvm -Wl,-vector-library=LIBMVEC
-Wl,-mlllvm -Wl,-reduce-array-computations=3
-ffunction-instr-generate(pass 1)
-ffunction-instr-use(pass 2) -Ofast -march=znver2
-mno-sse4a -fstruct-layout=5
-mlllvm -vectorize-memory-aggressively
-mlllvm -function-specialize -mlllvm -enable-gvn-hoist

(Continued on next page)
Lenovo Global Technology
ThinkSystem SR665
2.80 GHz, AMD EPYC 7282

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

SPECspeed®2017_int_base = 8.35
SPECspeed®2017_int_peak = 8.55

Peak Optimization Flags (Continued)

600.perlbench_s (continued):
-mlvm -unroll-threshold=50 -fremap-arrays
-mlvm -vector-library=LIBMVEC
-mlvm -reduce-array-computations=3
-mlvm -global-vectorize-slp -mlvm -inline-threshold=1000
-flv-function-specialization -DSPEC_OPENMP -fopenmp
-DUSE_OPENMP -lmvec -lamdlibm -fopenmp=libomp -lomp
-lpthread -ldl -ljemalloc -lflang

602.gcc_s: -fito -Wl,-mlvm -Wl,-function-specialize
-Wl,-mlvm -Wl,-region-vectorize
-Wl,-mlvm -Wl,-vector-library=LIBMVEC
-Wl,-mlvm -Wl,-reduce-array-computations=3 -Ofast
-march=znver2 -mno-sse4a -fstruct-layout=5
-mlvm -vectorize-memory-aggressively
-mlvm -function-specialize -mlvm -enable-gvn-hoist
-mlvm -unroll-threshold=50 -fremap-arrays
-mlvm -vector-library=LIBMVEC
-mlvm -reduce-array-computations=3
-mlvm -global-vectorize-slp -mlvm -inline-threshold=1000
-flv-function-specialization -z muldefs -DSPEC_OPENMP
-fopenmp -DUSE_OPENMP -fgnu89-inline -fopenmp=libomp
-lomp -lpthread -ldl -ljemalloc

605.mcf_s: -fito -Wl,-mlvm -Wl,-function-specialize
-Wl,-mlvm -Wl,-region-vectorize
-Wl,-mlvm -Wl,-vector-library=LIBMVEC
-Wl,-mlvm -Wl,-reduce-array-computations=3 -Ofast
-march=znver2 -mno-sse4a -fstruct-layout=5
-mlvm -vectorize-memory-aggressively
-mlvm -function-specialize -mlvm -enable-gvn-hoist
-mlvm -unroll-threshold=50 -fremap-arrays
-mlvm -vector-library=LIBMVEC
-mlvm -reduce-array-computations=3
-mlvm -global-vectorize-slp -mlvm -inline-threshold=1000
-flv-function-specialization -DSPEC_OPENMP -fopenmp
-DUSE_OPENMP -lmvec -lamdlibm -fopenmp=libomp -lomp
-lpthread -ldl -ljemalloc -lflang

625.x264_s: Same as 600.perlbench_s

657.xz_s: basepeak = yes

C++ benchmarks:

(Continued on next page)
Lenovo Global Technology
ThinkSystem SR665
2.80 GHz, AMD EPYC 7282

SPEC CPU®2017 Integer Speed Result
Copyright 2017-2020 Standard Performance Evaluation Corporation

<table>
<thead>
<tr>
<th>SPECspeed®2017_int_base</th>
<th>8.35</th>
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<tbody>
<tr>
<td>SPECspeed®2017_int_peak</td>
<td>8.55</td>
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Lenovo Global Technology
Test Date: Jun-2020
Hardware Availability: Jun-2020
Software Availability: Nov-2019

Peak Optimization Flags (Continued)

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Flags</th>
</tr>
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<tbody>
<tr>
<td>620.omnetpp_s:</td>
<td>basepeak = yes</td>
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<tr>
<td>623.xalancbmk_s:</td>
<td>-m32 -flto -Wl,-mllvm -Wl,-function-specialize</td>
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<td></td>
<td>-Wl,-mllvm -Wl,-region-vectorize</td>
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<td></td>
<td>-Wl,-mllvm -Wl,-vector-library=LIBMVEC</td>
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<td>-Wl,-mllvm -Wl,-reduce-array-computations=3 -Ofast</td>
</tr>
<tr>
<td></td>
<td>-march=znver2 -flv-function-specialization</td>
</tr>
<tr>
<td></td>
<td>-mllvm -unroll-threshold=100</td>
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<td>-mllvm -enable-partial-unswitch</td>
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<td></td>
<td>-mllvm -loop-unswitch-threshold=200000</td>
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<td>-mllvm -vector-library=LIBMVEC</td>
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<td>-mllvm -inline-threshold=1000 -DSPEC_OPENMP -fopenmp</td>
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<td>-DUSE_OPENMP -fopenmp=libomp -lomp -lpthread -ldl</td>
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<td></td>
<td>-ljemalloc</td>
</tr>
<tr>
<td>631.deepsjeng_s:</td>
<td>-flto -Wl,-mllvm -Wl,-function-specialize</td>
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<td>-Wl,-mllvm -Wl,-region-vectorize</td>
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<td>-Wl,-mllvm -Wl,-vector-library=LIBMVEC</td>
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<td>-Wl,-mllvm -Wl,-reduce-array-computations=3 -Ofast</td>
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<td>-march=znver2 -flv-function-specialization</td>
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<td>-mllvm -unroll-threshold=100</td>
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<td>-mllvm -vector-library=LIBMVEC</td>
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<td>-mllvm -inline-threshold=1000 -DSPEC_OPENMP -fopenmp</td>
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<tr>
<td></td>
<td>-DUSE_OPENMP -fopenmp=libomp -lomp -lpthread -ldl</td>
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<tr>
<td></td>
<td>-lmvec -lamdllbm -ljemalloc -lflang</td>
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<tr>
<td>641.leela_s:</td>
<td>basepeak = yes</td>
</tr>
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Fortran benchmarks:

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Flags</th>
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</thead>
<tbody>
<tr>
<td>648.exchange2_s:</td>
<td>basepeak = yes</td>
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Peak Other Flags

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Flags</th>
</tr>
</thead>
<tbody>
<tr>
<td>C benchmarks:</td>
<td>-Wno-return-type</td>
</tr>
<tr>
<td>C++ benchmarks (except as noted below):</td>
<td>-Wno-return-type</td>
</tr>
<tr>
<td>623.xalancbmk_s:</td>
<td>-Wno-return-type</td>
</tr>
<tr>
<td></td>
<td>-L/sppo/dev/cpu2017/v110/amd_speed_aocc200_rome_C_lib/32</td>
</tr>
</tbody>
</table>

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

Fortran benchmarks:
-Wno-return-type

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-Rome2P-K.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-Rome2P-K.xml