**Lenovo Global Technology**

**ThinkSystem SR635**

**2.80 GHz, AMD EPYC 7282**

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**CPU2017 License:** 9017

**Test Sponsor:** Lenovo Global Technology

**Tested by:** Lenovo Global Technology

**Test Date:** Mar-2020

**Hardware Availability:** Jan-2020

**Software Availability:** Nov-2019

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**Threads**

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Threads</th>
<th>SPECspeed®2017_int_base</th>
<th>SPECspeed®2017_int_peak</th>
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<tr>
<td>600.perlbench_s</td>
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<td>8.92</td>
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<tr>
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<td>605.mcf_s</td>
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<tr>
<td>620.omnetpp_s</td>
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<td>15.2</td>
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<tr>
<td>623.xalancbmk_s</td>
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<tr>
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<tr>
<td>631.deepsjeng_s</td>
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<td>641.leela_s</td>
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<td>648.exchange2_s</td>
<td>16</td>
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<tr>
<td>657.xz_s</td>
<td>16</td>
<td>15.8</td>
<td></td>
</tr>
</tbody>
</table>

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**Hardware**

**CPU Name:** AMD EPYC 7282

**Max MHz:** 3200

**Nominal:** 2800

**Enabled:** 16 cores, 1 chip

**Orderable:** 1 chip

**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:** 256 GB (8 x 32 GB 2Rx4 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 CFE107O released Dec-2019

**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
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ThinkSystem SR635
2.80 GHz, AMD EPYC 7282

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

Lenovo Global Technology

SPECspeed®2017_int_base = 8.27
SPECspeed®2017_int_peak = 8.47

Results Table

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<thead>
<tr>
<th>Benchmark</th>
<th>Threads</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Seconds</th>
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<td>648.exchange2_s</td>
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</tbody>
</table>

SPECspeed®2017_int_base = 8.27
SPECspeed®2017_int_peak = 8.47

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 = "0-15"
LD_LIBRARY_PATH = 
  "/home/cpu2017-1.1.0-amd-rome-aocc200-C1/amd_speed_aocc200_rome_C_lib/64
  ;/home/cpu2017-1.1.0-amd-rome-aocc200-C1/amd_speed_aocc200_rome_C_lib/32
"
MALLOC_CONF = "retain:true"
OMP_DYNAMIC = "false"
OMP_SCHEDULE = "static"
OMP_STACKSIZE = "128M"
OMP_THREAD_LIMIT = "16"

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"

Environment variables set by runcpu during the 648.exchange2_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.
Yes: The test sponsor attests, as of date of publication, that CVE-2018-3640 (Spectre variant 3a)
**General Notes (Continued)**

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

**Platform Notes**

**BIOS settings:**
- Set Operating Mode set to Maximum Performance
- SMT Mode set to Disabled
- NUMA nodes per socket set to NPS1

**Sysinfo program**
```
/home/cpu2017-1.1.0-amd-rome-aocc200-C1/bin/sysinfo
```

**Rev:** r6365 of 2019-08-21 295195f888a3d7ed1be6e46a485a0011
```
running on localhost.localdomain Mon Mar  2 21:18:08 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
```
```
   1 "physical id"s (chips)
```
```
   16 "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 : 16
```
```
physical 0: 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): 16
```
```
On-line CPU(s) list: 0-15
```
```
Thread(s) per core: 1
```
```
Core(s) per socket: 16
```
```
Socket(s): 1
```
```
NUMA node(s): 1
```
```
Vendor ID: AuthenticAMD
```
```
CPU family: 23
```
```
Model: 49
```

(Continued on next page)
Lenovo Global Technology

ThinkSystem SR635
2.80 GHz, AMD EPYC 7282

SPECspeed®2017_int_base = 8.27
SPECspeed®2017_int_peak = 8.47

Platform Notes (Continued)

Model name: AMD EPYC 7282 16-Core Processor
Stepping: 0
CPU MHz: 2936.565
CPU max MHz: 2800.0000
CPU min MHz: 1500.0000
BogoMIPS: 5589.59
Virtualization: AMD-V
L1d cache: 32K
L1i cache: 32K
L2 cache: 512K
L3 cache: 16384K
NUMA node0 CPU(s): 0-15
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 nopl xtopology nonstop-tsc cpuid extd_apicid aperfmperf pni
pclmulqdq monitor ssse3 sse4_1 sse4_2 movbe popcnt aes xsave avx f16c
rdseed smep bmi2 rdt_a rdseed adx smap clflushopt clwb sha_ni xsaveopt xgetbv1
xsavec xsaveopt xgetbv1 xsaves cqm_llc cqm_occup_llc cqm_mbb_total cqm_mbb_local czero
irperf xsaves cqm_mbb_local

/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
    node 0 size: 257764 MB
    node 0 free: 256888 MB

From /proc/meminfo
    MemTotal: 263950920 kB
    HugePages_Total: 0
    Hugepagesize: 2048 kB

From /etc/*release* /etc/*version*
    os-release:
        NAME="Red Hat Enterprise Linux"
        VERSION="8.1 (Ootpa)"

(Continued on next page)
## Lenovo Global Technology

**ThinkSystem SR635**  
2.80 GHz, AMD EPYC 7282

<table>
<thead>
<tr>
<th>CPU2017 License:</th>
<th>9017</th>
</tr>
</thead>
<tbody>
<tr>
<td>Test Sponsor:</td>
<td>Lenovo Global Technology</td>
</tr>
<tr>
<td>Tested by:</td>
<td>Lenovo Global Technology</td>
</tr>
<tr>
<td>Test Date:</td>
<td>Mar-2020</td>
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<tr>
<td>Hardware Availability:</td>
<td>Jan-2020</td>
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<td>Nov-2019</td>
</tr>
</tbody>
</table>

**SPECspeed®2017_int_base = 8.27**  
**SPECspeed®2017_int_peak = 8.47**

### Platform Notes (Continued)

```
ID="rhel"
ID_LIKE="fedora"
VERSION_ID="8.1"
PLATFORM_ID="platform:el8"
PRETTY_NAME="Red Hat Enterprise Linux 8.1 (Ootpa)"
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 sanitization  
- **CVE-2017-5715 (Spectre variant 2):** Mitigation: Full AMD retpoline, IBPB: conditional, IBRS_FW, STIBP: disabled, RSB filling

```
run-level 3 Mar 2 21:11
```

```
SPECC is set to: /home/cpu2017-1.1.0-amd-rome-aocc200-C1
Filesystem Type Size Used Avail Use% Mounted on
/dev/sdb2 xfs 838G 20G 818G 3% /home
```

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

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

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

#### Platform Notes (Continued)

(End of data from sysinfo program)

#### 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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C++     | 623.xalancbmk_s(peak)
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(Continued on next page)
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SPEC CPU®2017 Integer Speed Result

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Compiler Version Notes (Continued)

==============================================================================
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)
Target: x86_64-unknown-linux-gnu
Thread model: posix
InstalledDir: /sppo/dev/compilers/aocc-compiler-2.0.0/bin
------------------------------------------------------------------------------
==============================================================================
Fortran | 648.exchange2_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
------------------------------------------------------------------------------

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

(Continued on next page)
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SPECspeed®2017_int_base = 8.27
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Base Portability Flags (Continued)

648.exchange2_s: -DSPEC_LP64
657.xz_s: -DSPEC_LP64

Base Optimization Flags

C benchmarks:
- flto -Wl,-mlllvm -Wl,-function-specialize
- Wl,-mlllvm -Wl,-region-vectorize -Wl,-mlllvm -Wl,-vector-library=LIBMVEC
- Wl,-mlllvm -Wl,-reduce-array-computations=3 -O3 -ffast-math
- march=znver2 -fstruct-layout=3 -mlllvm -unroll-threshold=50
- fremap-arrays -mlllvm -function-specialize -mlllvm -enable-gvn-hoist
- mlllvm -reduce-array-computations=3 -mlllvm -global-vectorize-slp
- mlllvm -vector-library=LIBMVEC -mlllvm -inline-threshold=1000
- flv-function-specialization -z muldefs -DSPEC_OPENMP -fopenmp
- DUSE_OPENMP -fopenmp=libomp -lomp -lpthread -ldl -lmvec -ladmlibm
- ljemalloc -lflang

C++ benchmarks:
- flto -Wl,-mlllvm -Wl,-function-specialize
- Wl,-mlllvm -Wl,-region-vectorize -Wl,-mlllvm -Wl,-vector-library=LIBMVEC
- Wl,-mlllvm -Wl,-reduce-array-computations=3
- Wl,-mlllvm -Wl,-suppress-fmas -O3 -ffast-math -march=znver2
- mlllvm -loop-unroll-threshold=200000 -mlllvm -vector-library=LIBMVEC
- mlllvm -unroll-threshold=100 -flv-function-specialization
- mlllvm -enable-partial-unswitch -z muldefs -DSPEC_OPENMP -fopenmp
- DUSE_OPENMP -fopenmp=libomp -lomp -lpthread -ldl -lmvec -ladmlibm
- ljemalloc -lflang

Fortran benchmarks:
- flto -Wl,-mlllvm -Wl,-function-specialize
- Wl,-mlllvm -Wl,-region-vectorize -Wl,-mlllvm -Wl,-vector-library=LIBMVEC
- Wl,-mlllvm -Wl,-reduce-array-computations=3 -ffast-math
- Wl,-mlllvm -Wl,-inline-recursion=4 -Wl,-mlllvm -Wl,-lsr-in-nested-loop
- Wl,-mlllvm -Wl,-enable-iv-split -O3 -march=znver2 -funroll-loops
- Mrecursive -mlllvm -vector-library=LIBMVEC -z muldefs
- mlllvm -disable-indvar-simplify -mlllvm -unroll-aggressive
- mlllvm -unroll-threshold=150 -DSPEC_OPENMP -fopenmp -DUSE_OPENMP
- fopenmp=libomp -lomp -lpthread -ldl -lmvec -ladmlibm -ljemalloc
- lflang
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ThinkSystem SR635
2.80 GHz, AMD EPYC 7282

SPEC CPU®2017 Integer Speed Result
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SPECspeed®2017_int_base = 8.27
SPECspeed®2017_int_peak = 8.47

CPU2017 License: 9017
Test Sponsor: Lenovo Global Technology
Test Date: Mar-2020
Hardware Availability: Jan-2020
Tested by: Lenovo Global Technology
Software Availability: Nov-2019

Base Other Flags

C benchmarks:
- Wno-return-type

C++ benchmarks:
- Wno-return-type

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,-mllvm -Wl,-function-specialize
- Wl,-mllvm -Wl,-region-vectorize
- Wl,-mllvm -Wl,-vector-library=LIBMVEC

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

600.perlbench_s (continued):
- W1, -mllvm -W1, -reduce-array-computations=3
- fprofile-instr-generate(pass 1)
- fprofile-instr-use(pass 2) -Ofast -march=znver2
- mno-sse4a -fstruct-layout=5
- mllvm -vectorize-memory-aggressively
- mllvm -function-specialize -mllvm -enable-gvn-hoist
- mllvm -unroll-threshold=50 -fremap-arrays
- mllvm -vector-library=LIBMVEC
- mllvm -reduce-array-computations=3
- mllvm -global-vectorize-slp -mllvm -inline-threshold=1000
- flv-function-specialization -DSPEC_OPENMP -fopenmp
- DUSE_OPENMP -lmvec -lamdlibm -fopenmp=libomp -lomp
- lpthread -ldl -ljemalloc -lflang

602.gcc_s: -flto -W1, -mllvm -W1, -function-specialize
- W1, -mllvm -W1, -region-vectorize
- W1, -mllvm -W1, -vector-library=LIBMVEC
- W1, -mllvm -W1, -reduce-array-computations=3 -Ofast
- march=znver2 -mno-sse4a -fstruct-layout=5
- mllvm -vectorize-memory-aggressively
- mllvm -function-specialize -mllvm -enable-gvn-hoist
- mllvm -unroll-threshold=50 -fremap-arrays
- mllvm -vector-library=LIBMVEC
- mllvm -reduce-array-computations=3
- mllvm -global-vectorize-slp -mllvm -inline-threshold=1000
- flv-function-specialization -z muldefs -DSPEC_OPENMP
- fopenmp -DUSE_OPENMP -fgnu89-inline -fopenmp=libomp
- lomp -lpthread -ldl -ljemalloc

605.mcf_s: -flto -W1, -mllvm -W1, -function-specialize
- W1, -mllvm -W1, -region-vectorize
- W1, -mllvm -W1, -vector-library=LIBMVEC
- W1, -mllvm -W1, -reduce-array-computations=3 -Ofast
- march=znver2 -mno-sse4a -fstruct-layout=5
- mllvm -vectorize-memory-aggressively
- mllvm -function-specialize -mllvm -enable-gvn-hoist
- mllvm -unroll-threshold=50 -fremap-arrays
- mllvm -vector-library=LIBMVEC
- mllvm -reduce-array-computations=3
- mllvm -global-vectorize-slp -mllvm -inline-threshold=1000
- flv-function-specialization -DSPEC_OPENMP -fopenmp
- DUSE_OPENMP -lmvec -lamdlibm -fopenmp=libomp -lomp
- lpthread -ldl -ljemalloc -lflang

(Continued on next page)
Lenovo Global Technology
ThinkSystem SR635
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Peak Optimization Flags (Continued)

625.x264_s: Same as 600.perlbench_s

657.xz_s: basepeak = yes

C++ benchmarks:
620.omnetpp_s: basepeak = yes

623.xalancbmk_s: -m32 -flto -Wl,-mllvm -Wl,-function-specialize
-Wl,-mllvm -Wl,-region-vectorize
-Wl,-mllvm -Wl,-vector-library=LIBMVEC
-march=znver2 -flv-function-specialization
-mllvm -unroll-threshold=100
-mllvm -enable-partial-unswitch
-mllvm -loop-unswitch-threshold=200000
-mllvm -vector-library=LIBMVEC
-mllvm -inline-threshold=1000 -DSPEC_OPENMP -fopenmp
-DUSE_OPENMP -fopenmp=libomp -lomp -lpthread -ldl

631.deepsjeng_s: -flto -Wl,-mllvm -Wl,-function-specialize
-Wl,-mllvm -Wl,-region-vectorize
-Wl,-mllvm -Wl,-vector-library=LIBMVEC
-march=znver2 -flv-function-specialization
-mllvm -unroll-threshold=100
-mllvm -enable-partial-unswitch
-mllvm -loop-unswitch-threshold=200000
-mllvm -vector-library=LIBMVEC
-mllvm -inline-threshold=1000 -DSPEC_OPENMP -fopenmp
-DUSE_OPENMP -fopenmp=libomp -lomp -lpthread -ldl
-lmvec -lamdlibm -ljemalloc -lflang

Fortran benchmarks:

641.leela_s: basepeak = yes

(Continued on next page)
## Lenovo Global Technology

**ThinkSystem SR635**  
2.80 GHz, AMD EPYC 7282

<table>
<thead>
<tr>
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Test Sponsor: Lenovo Global Technology  
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</tbody>
</table>

### Peak Optimization Flags (Continued)

For Fortran benchmarks (continued):

- `-lflang`

### Peak Other Flags

- C benchmarks:
  - `-Wno-return-type`
- C++ benchmarks (except as noted below):
  - `-Wno-return-type`
- `623.xalancbmk.s`:
  - `-Wno-return-type`
- `-L/sppo/dev/cpu2017/v110/amd_speed_aocc200_rome_C_lib/32`

For Fortran benchmarks:

- `-Wno-return-type`

### 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:


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