**SPEC CPU®2017 Integer Speed Result**

Copyright 2017-2020 Standard Performance Evaluation Corporation

Lenovo Global Technology
ThinkSystem SR635
3.20 GHz, AMD EPYC 7F72

**SPECspeed®2017_int_base** = 9.61
**SPECspeed®2017_int_peak** = 9.84

<table>
<thead>
<tr>
<th>Thread</th>
<th>Benchmark</th>
<th>Threads</th>
<th>SPECspeed®2017_int_base</th>
<th>SPECspeed®2017_int_peak</th>
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<td>657.xz_s</td>
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</tr>
</tbody>
</table>

**Hardware**

- **CPU Name:** AMD EPYC 7F72
- **Max MHz:** 3700
- **Nominal:** 3200
- **Enabled:** 24 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:** 192 MB I+D on chip per chip, 16 MB shared / 2 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 CFE111B released Feb-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 SR635
3.20 GHz, AMD EPYC 7F72

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

Results Table

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Threads</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Seconds</th>
<th>Ratio</th>
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</tbody>
</table>

SPECspeed®2017_int_base = 9.61
SPECspeed®2017_int_peak = 9.84

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)
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Environment Variables Notes

Environment variables set by runcpu before the start of the run:
GOMP_CPU_AFFINITY = "0-23"
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 = "24"

Environment variables set by runcpu during the 600.perlbench_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)
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.

(Continued on next page)
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General Notes (Continued)

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 NPS2

Sysinfo program /home/cpu2017-1.1.0-amd-rome-aocc200-C1/bin/sysinfo
Rev: r6365 of 2019-08-21 295195f888a3d7edeb1e6e46a485a0011
running on localhost.localdomain Sat Mar 21 01:01:47 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 7F72 24-Core Processor
  1 "physical id"s (chips)
  24 "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 : 24
  siblings : 24
physical 0: cores 0 1 4 5 8 9 12 13 16 17 20 21 24 25 28 29 32 33 36 37 40 41 44 45

From lscpu:
Architecture:     x86_64
CPU op-mode(s):   32-bit, 64-bit
Byte Order:       Little Endian
CPU(s):           24
On-line CPU(s) list: 0-23
Thread(s) per core: 1
Core(s) per socket: 24
Socket(s):        1
NUMA node(s):     2
Vendor ID:        AuthenticAMD
CPU family:       23
Model:            49
Model name:       AMD EPYC 7F72 24-Core Processor
Stepping:         0
CPU MHz:          2035.916
**Platform Notes (Continued)**

```plaintext
CPU max MHz: 3200.0000
CPU min MHz: 25000000
BogoMIPS: 6387.90
Virtualization: AMD-V
L1d cache: 32K
L1i cache: 32K
L2 cache: 512K
L3 cache: 16384K
NUMA node0 CPU(s): 0-11
NUMA node1 CPU(s): 12-23
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 nop1 xtopology nonstop_tsc cpuid extd_apicid aperfmperf pni
pclmulqdq monitor sse3 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
osw ibs skinit wdt tce topoext perfctr_core perfctr_nb b perpetrctr_llc mwaitx cpb
cat_l3 cdp_l3 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 xsaves xgetbv1
xsave vmsave_vmload vgif umip rdpid
```

From `numactl --hardware`

```
WARNING: a numactl 'node' might or might not correspond to a physical chip.
```
```plaintext
available: 2 nodes (0-1)
node 0 cpus: 0 1 2 3 4 5 6 7 8 9 10 11
node 0 size: 128797 MB
node 0 free: 128402 MB
node 1 cpus: 12 13 14 15 16 17 18 19 20 21 22 23
node 1 size: 129007 MB
node 1 free: 128557 MB
node distances:
node 0    1
0: 10 12
1: 12 10
```

From `/proc/meminfo`
```plaintext
MemTotal: 263992676 kB
HugePages_Total: 0
Hugepagesize: 2048 kB
```

From `/etc/*release*`
```plaintext
From `/etc/*version*`
```
```
```
# SPEC CPU®2017 Integer Speed Result

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ThinkSystem SR635  
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<table>
<thead>
<tr>
<th>SPECspeed®2017_int_base</th>
<th>9.61</th>
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</thead>
<tbody>
<tr>
<td>SPECspeed®2017_int_peak</td>
<td>9.84</td>
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<table>
<thead>
<tr>
<th>CPU2017 License</th>
<th>9017</th>
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<tbody>
<tr>
<td>Test Sponsor</td>
<td>Lenovo Global Technology</td>
</tr>
<tr>
<td>Tested by</td>
<td>Lenovo Global Technology</td>
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<tr>
<td>Test Date</td>
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<tr>
<td>Hardware Availability</td>
<td>Jun-2020</td>
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<tr>
<td>Software Availability</td>
<td>Nov-2019</td>
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<table>
<thead>
<tr>
<th>Platform Notes (Continued)</th>
</tr>
</thead>
<tbody>
<tr>
<td>NAME=&quot;Red Hat Enterprise Linux&quot;</td>
</tr>
<tr>
<td>VERSION=&quot;8.1 (Ootpa)&quot;</td>
</tr>
<tr>
<td>ID=&quot;rhel&quot;</td>
</tr>
<tr>
<td>ID_LIKE=&quot;fedora&quot;</td>
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<tr>
<td>VERSION_ID=&quot;8.1&quot;</td>
</tr>
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<td>PLATFORM_ID=&quot;platform:el8&quot;</td>
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<tr>
<td>ANSI_COLOR=&quot;0;31&quot;</td>
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<tr>
<td>redhat-release: Red Hat Enterprise Linux release 8.1 (Ootpa)</td>
</tr>
<tr>
<td>system-release: Red Hat Enterprise Linux release 8.1 (Ootpa)</td>
</tr>
<tr>
<td>system-release-cpe: cpe:/o:redhat:enterprise_linux:8.1:ga</td>
</tr>
</tbody>
</table>

| 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 |

<table>
<thead>
<tr>
<th>Kernel self-reported vulnerability status:</th>
</tr>
</thead>
<tbody>
<tr>
<td>CVE-2018-3620 (L1 Terminal Fault): Not affected</td>
</tr>
<tr>
<td>Microarchitectural Data Sampling: Not affected</td>
</tr>
<tr>
<td>CVE-2017-5754 (Meltdown): Not affected</td>
</tr>
<tr>
<td>CVE-2018-3639 (Speculative Store Bypass): Mitigation: Speculative Store Bypass disabled via prctl and seccomp</td>
</tr>
<tr>
<td>CVE-2017-5753 (Spectre variant 1): Mitigation: usercopy/swapgs barriers and __user pointer sanitization</td>
</tr>
<tr>
<td>CVE-2017-5715 (Spectre variant 2): Mitigation: Full AMD retpoline, IBPB: conditional, IBRS_FW, STIBP: disabled, RSB filling</td>
</tr>
</tbody>
</table>

<table>
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<tr>
<th>run-level 3 Mar 21 00:46</th>
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</thead>
<tbody>
<tr>
<td>SPEC is set to: /home/cpu2017-1.1.0-amd-rome-aocc200-C1</td>
</tr>
<tr>
<td>Filesystem Type Size Used Avail Use% Mounted on</td>
</tr>
<tr>
<td>/dev/sdb2 xfs 838G 21G 818G 3% /home</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>From /sys/devices/virtual/dmi/id</th>
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<tbody>
<tr>
<td>BIOS: Lenovo CFE111B 02/11/2020</td>
</tr>
<tr>
<td>Vendor: Lenovo</td>
</tr>
<tr>
<td>Product: ThinkSystem SR635 -[7Y000000000]-</td>
</tr>
<tr>
<td>Product Family: ThinkSystem</td>
</tr>
<tr>
<td>Serial: 0123456789</td>
</tr>
</tbody>
</table>

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

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Platform Notes (Continued)
8x Samsung M393A4K40DB2-CWE 32 kB 2 rank 3200
8x Unknown Unknown

(End of data from sysinfo program)

Compiler Version Notes

==============================================================================
<p>| 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 |</p>
<table>
<thead>
<tr>
<th>InstalledDir: /sppo/dev/compilers/aocc-compiler-2.0.0/bin</th>
</tr>
</thead>
</table>

==============================================================================
<p>| 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 |</p>
<table>
<thead>
<tr>
<th>InstalledDir: /sppo/dev/compilers/aocc-compiler-2.0.0/bin</th>
</tr>
</thead>
</table>

==============================================================================
<p>| C++     | 620.omnetpp_s(base, peak) 623.xalancbmk_s(base) 631.deepsjeng_s(base, peak) 641.leea_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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| Thread model: posix |</p>
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<p>| 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 |</p>
<table>
<thead>
<tr>
<th>Thread model: posix</th>
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(Continued on next page)
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Test Date: Mar-2020
Hardware Availability: Jun-2020
Software Availability: Nov-2019

Installing Notes (Continued)

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
**SPEC CPU®2017 Integer Speed Result**

**Lenovo Global Technology**

ThinkSystem SR635
3.20 GHz, AMD EPYC 7F72

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**SPECspeed®2017_int_base = 9.61**

**SPECspeed®2017_int_peak = 9.84**

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**Base Portability Flags (Continued)**

- 631.deepsjeng_s: -DSPEC_LP64
- 641.leela_s: -DSPEC_LP64
- 648.exchange2_s: -DSPEC_LP64
- 657.xz_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
- -DUSE_OPENMP -fopenmp=libomp -lomp -lpthread -ldl -lmvec -lamdlibm
- -ljemalloc -lflang

**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
- -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:**

- -flto -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,-lsr-in-nested-loop
- -Wl,-mllvm -Wl,-enable-lv-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`

Fortran benchmarks:
- `-Wno-return-type`

## Peak Compiler Invocation

C benchmarks:
- `clang`

C++ benchmarks:
- `clang++`

Fortran benchmarks:
- `flang`

## Peak Portability Flags

- `600.perlbmk_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.perlbmk_s: -flto -Wl,-mllvm -Wl,-function-specialize`
- `Wl,-mllvm -Wl,-region-vectorize`
- `Wl,-mllvm -Wl,-vector-library=LIBMVEC`

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Lenovo Global Technology
ThinkSystem SR635
3.20 GHz, AMD EPYC 7F72

SPECspeed®2017_int_base = 9.61
SPECspeed®2017_int_peak = 9.84

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

Peak Optimization Flags (Continued)

600.perlbench_s (continued):
- W1, -mlllvm -W1, -reduce-array-computations=3
- fprofile-instr-generate(pass1)
- fprofile-instr-use(pass2) -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 -DSPEC_OPENMP -fopenmp
- DUSE_OPENMP -lmvec -lxmlibm -fopenmp=libomp -lomp
- lpthread -ldl -ljemalloc -lflang

602.gcc_s: basepeak = yes

605.mcf_s: -flto -W1, -mlllvm -W1, -function-specialize
- W1, -mlllvm -W1, -region-vectorize
- W1, -mlllvm -W1, -vector-library=LIBMVEC
- W1, -mlllvm -W1, -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 -DSPEC_OPENMP -fopenmp
- DUSE_OPENMP -lmvec -lxmlibm -fopenmp=libomp -lomp
- lpthread -ldl -ljemalloc -lflang

625.x264_s: Same as 600.perlbench_s

657.xz_s: basepeak = yes

C++ benchmarks:

620.omnetpp_s: basepeak = yes

623.xalanbk_s: -m32 -flto -W1, -mlllvm -W1, -function-specialize
- W1, -mlllvm -W1, -region-vectorize
- W1, -mlllvm -W1, -vector-library=LIBMVEC
- W1, -mlllvm -W1, -reduce-array-computations=3 -Ofast
- march=znver2 -flv-function-specialization
- mlllvm -unroll-threshold=100

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**Lenovo Global Technology**

**ThinkSystem SR635**

3.20 GHz, AMD EPYC 7F72

**SPEC CPU®2017 Integer Speed Result**

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**SPECspeed®2017_int_base = 9.61**

**SPECspeed®2017_int_peak = 9.84**

**Peak Optimization Flags (Continued)**

623.xalancbmk_s (continued):
- 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
- -ljemalloc

631.deepsjeng_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 -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

641.leela_s: basepeak = yes

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 -ffast-math
- -Wl,-mllvm -Wl,-inline-recursion=4 -Wl,-mllvm -Wl,-lsr-in-nested-loop
- -Wl,-mllvm -Wl,-enable-iv-split -O3 -march=znver2 -funroll-loops
- -Mrecursive -mllvm -vector-library=LIBMVEC
- -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

**Peak Other Flags**

C benchmarks:
- -Wno-return-type

C++ benchmarks (except as noted below):
- -Wno-return-type

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### Lenovo Global Technology

**ThinkSystem SR635**
**3.20 GHz, AMD EPYC 7F72**

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**SPECspeed®2017_int_base = 9.61**
**SPECspeed®2017_int_peak = 9.84**

### Peak Other Flags (Continued)

623.xalancbmk_s: -Wno-return-type
-L/sppo/dev/cpu2017/v110/amd_speed_aocc200_rome_C_lib/32

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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