## Lenovo Global Technology

**ThinkSystem SR635**  
2.90 GHz, AMD EPYC 7272

**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

### Hardware

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Threads</th>
<th>SPECspeed®2017_int_base</th>
<th>SPECspeed®2017_int_peak</th>
</tr>
</thead>
<tbody>
<tr>
<td>perlbench_s</td>
<td>12</td>
<td>4.59</td>
<td>8.19</td>
</tr>
<tr>
<td>gcc_s</td>
<td>12</td>
<td>4.67</td>
<td>8.93</td>
</tr>
<tr>
<td>mcf_s</td>
<td>12</td>
<td></td>
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</tr>
<tr>
<td>omnetpp_s</td>
<td>12</td>
<td>4.66</td>
<td></td>
</tr>
<tr>
<td>xalancbmk_s</td>
<td>12</td>
<td>8.87</td>
<td>14.3</td>
</tr>
<tr>
<td>x264_s</td>
<td>12</td>
<td></td>
<td></td>
</tr>
<tr>
<td>deepsjeng_s</td>
<td>12</td>
<td>4.63</td>
<td>11.9</td>
</tr>
<tr>
<td>leela_s</td>
<td>12</td>
<td>4.91</td>
<td>12.2</td>
</tr>
<tr>
<td>exchange2_s</td>
<td>12</td>
<td></td>
<td></td>
</tr>
<tr>
<td>xz_s</td>
<td>12</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### 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 CFE1070 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
### Results Table

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Threads</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Seconds</th>
<th>Ratio</th>
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</thead>
<tbody>
<tr>
<td>600.perlbench_s</td>
<td>12</td>
<td>388.0</td>
<td>4.58</td>
<td>386.0</td>
<td>4.59</td>
<td>386.0</td>
<td>4.59</td>
<td>1</td>
<td>380.0</td>
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<tr>
<td>602.gcc_s</td>
<td>12</td>
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<td>8.92</td>
<td>447.0</td>
<td>8.91</td>
<td>447.0</td>
<td>8.91</td>
<td>1</td>
<td>446.0</td>
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<tr>
<td>605.mcf_s</td>
<td>12</td>
<td>330.0</td>
<td>14.3</td>
<td>328.0</td>
<td>14.4</td>
<td>329.0</td>
<td>14.3</td>
<td>1</td>
<td>311.0</td>
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<tr>
<td>620.omnetpp_s</td>
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<td>350.0</td>
<td>4.66</td>
<td>349.0</td>
<td>4.68</td>
<td>353.0</td>
<td>4.63</td>
<td>12</td>
<td>350.0</td>
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<td>623.xalancmk_s</td>
<td>12</td>
<td>161.0</td>
<td>8.80</td>
<td>160.0</td>
<td>8.87</td>
<td>159.0</td>
<td>8.91</td>
<td>1</td>
<td>147.0</td>
</tr>
<tr>
<td>625.x264_s</td>
<td>12</td>
<td>149.0</td>
<td>11.8</td>
<td>148.0</td>
<td>11.9</td>
<td>149.0</td>
<td>11.9</td>
<td>1</td>
<td>145.0</td>
</tr>
<tr>
<td>631.deepsjeng_s</td>
<td>12</td>
<td>310.0</td>
<td>4.63</td>
<td>311.0</td>
<td>4.61</td>
<td>310.0</td>
<td>4.63</td>
<td>1</td>
<td>304.0</td>
</tr>
<tr>
<td>641.leela_s</td>
<td>12</td>
<td>422.0</td>
<td>4.04</td>
<td>422.0</td>
<td>4.04</td>
<td>424.0</td>
<td>4.03</td>
<td>12</td>
<td>422.0</td>
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<tr>
<td>648.exchange2_s</td>
<td>12</td>
<td>186.0</td>
<td>15.8</td>
<td>187.0</td>
<td>15.8</td>
<td>186.0</td>
<td>15.8</td>
<td>12</td>
<td>186.0</td>
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<tr>
<td>657.xz_s</td>
<td>12</td>
<td>474.0</td>
<td>13.1</td>
<td>474.0</td>
<td>13.0</td>
<td>473.0</td>
<td>13.1</td>
<td>12</td>
<td>473.0</td>
</tr>
</tbody>
</table>

**Compiler Notes**


**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.:

```bash
default --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

```bash
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 = "0-11"
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 = "12"

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 657.xz_s peak run:
GOMP_CPU_AFFINITY = "0-11"

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 295195f888a3d7edbl6e646a485a0011
running on localhost.localdomain Fri Mar 6 00:25:02 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 7272 12-Core Processor
  1 "physical id"s (chips)
  12 "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 : 12
siblings : 12
physical 0: cores 0 1 2 4 5 6 8 9 10 12 13 14

From lscpu:
Architecture: x86_64
CPU op-mode(s): 32-bit, 64-bit
Byte Order: Little Endian
CPU(s): 12
On-line CPU(s) list: 0-11
Thread(s) per core: 1
Core(s) per socket: 12
Socket(s): 1
NUMA node(s): 1
Vendor ID: AuthenticAMD
CPU family: 23
Model: 49

(Continued on next page)
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SPECspeed®2017_int_base = 8.03
SPECspeed®2017_int_peak = 8.19

Platform Notes (Continued)

Model name: AMD EPYC 7272 12-Core Processor
Stepping: 0
CPU MHz: 2991.840
CPU max MHz: 2900.0000
CPU min MHz: 1500.0000
BogoMIPS: 5789.28
Virtualization: AMD-V
L1d cache: 32K
L1i cache: 32K
L2 cache: 512K
L3 cache: 16384K
NUMA node0 CPU(s): 0-11

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 fma cx16 sse4_1 sse4_2 movbe popcnt aes xsave avx f16c
rdrcr lahf_lm cmp_legacy svm extapic cr8_legacy abm sse4a misalignsse 3dnowprefetch
oswv ibs skinit wdt tce topoext perfctr_core perfctr_nb bptext perfctr_llc mwaitx cpb
cat_l3 cpd_l3 hw_pstate smm mba svm call fsgsbase bmi1 avx2 smep bmi2 cqm rdt_a rsseed adx
clflushopt clwb sha ni xsavesopt xsaveopt xgetbv1 xsaves cqm_llc cqm_occup_llc cqm_mbb_total
cqm_mbb_local clzero irperf xsaverptr wbnoinvd arat npt lbrv svm_lock nrip_save
tsc_scale vmbcb_clean flushbyasid decodeassist pausefilter pfthreshold avic v_vmsave_vmload
gvf 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
    node 0 size: 257763 MB
    node 0 free: 256908 MB
    node distances:
      node 0
  0: 10

From /proc/meminfo
  MemTotal: 263949620 kB
  HugePages_Total: 0
  Hugepagesize: 2048 kB

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

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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 6 00:14

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 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)
**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)  
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  
-----------------------------------------------------------------------------------------------
```

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

**SPEC CPU®2017 Integer Speed Result**

<table>
<thead>
<tr>
<th>SPECspeed®2017_int_base = 8.03</th>
</tr>
</thead>
<tbody>
<tr>
<td>SPECspeed®2017_int_peak = 8.19</td>
</tr>
</tbody>
</table>

---

**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
```

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SPEC CPU®2017 Integer Speed Result

SPECspeed®2017_int_base = 8.03
SPECspeed®2017_int_peak = 8.19

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Base Portability Flags (Continued)

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

Base Optimization Flags

C benchmarks:
-ffto -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 -lamdlibm
-ljemalloc -lflang

C++ benchmarks:
-ffto -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-unswitch-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 -lamdlibm
-ljemalloc -lflang

Fortran benchmarks:
-ffto -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 -lamdlibm -ljemalloc
-lflang
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SPECspeed®2017_int_base = 8.03
SPECspeed®2017_int_peak = 8.19

CPU2017 License: 9017
Test Sponsor: Lenovo Global Technology
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Test Date: Mar-2020
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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

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Lenovo Global Technology
ThinkSystem SR635
2.90 GHz, AMD EPYC 7272

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

SPECspeed®2017_int_base = 8.03
SPECspeed®2017_int_peak = 8.19

Test Date: Mar-2020
Hardware Availability: Jan-2020
Software Availability: Nov-2019

Peak Optimization Flags (Continued)

600.perlbench_s (continued):
- Wl,-mllvm -Wl,-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 -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
- 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 -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
- 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

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Peak Optimization Flags (Continued)

625.x264_s: Same as 600.perlbmk_s

657.xz_s: -flto -Wl,-mllvm -Wl,-function-specialize
-Wl,-mllvm -Wl,-region-vectorize
-Wl,-mllvm -Wl,-vector-library=LIBMVEC
-march=zvner2 -mno-sse4a -fstruct-layout=5

627.xz_s: -co0 -flto -Wl,-mllvm -Wl,-region-vectorize
-Wl,-mllvm -Wl,-vector-library=LIBMVEC
-march=zvner2 -fstruct-layout=5

657.xz_s: -flto -Wl,-mllvm -Wl,-function-specialize
-Wl,-mllvm -Wl,-region-vectorize
-Wl,-mllvm -Wl,-vector-library=LIBMVEC
-march=zvner2 -fstruct-layout=5

657.xz_s: -flto -Wl,-mllvm -Wl,-function-specialize
-Wl,-mllvm -Wl,-region-vectorize
-Wl,-mllvm -Wl,-vector-library=LIBMVEC
-march=zvner2 -fstruct-layout=5

657.xz_s: -flto -Wl,-mllvm -Wl,-function-specialize
-Wl,-mllvm -Wl,-region-vectorize
-Wl,-mllvm -Wl,-vector-library=LIBMVEC
-march=zvner2 -fstruct-layout=5

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

631.deepsjeng_s: -flto -Wl,-mllvm -Wl,-function-specialize
-Wl,-mllvm -Wl,-region-vectorize
-Wl,-mllvm -Wl,-vector-library=LIBMVEC
-march=zvner2 -flv-function-specialization

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Test Date: Mar-2020
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Peak Optimization Flags (Continued)

641.leela_s: basepeak = yes
Fortran benchmarks:
648.exchange2_s: basepeak = yes

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

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-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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