**Supermicro**

Cloud DC A+ Server AS -2015CS-TNR  
(H13SSW , AMD EPYC 9754)

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**CPU2017 License:** 001176  
**Test Sponsor:** Supermicro  
**Tested by:** Supermicro  
**Test Date:** May-2023  
**Hardware Availability:** Jun-2023  
**Software Availability:** Nov-2022

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| SPECrate®2017_fp_base | 710  
|-----------------------|-----  
| SPECrate®2017_fp_peak | 765  

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**Hardware**

- **CPU Name:** AMD EPYC 9754  
- **Max MHz:** 3100  
- **Nominal:** 2250  
- **Enabled:** 128 cores, 1 chip, 2 threads/core  
- **Orderable:** 1 chip  
- **Cache L1:** 32 KB I + 32 KB D on chip per core  
- **L2:** 1 MB I+D on chip per core  
- **L3:** 256 MB I+D on chip per core, 16 MB shared / 8 cores  
- **Memory:** 768 GB (12 x 64 GB 2Rx4 PC5-4800B-R)  
- **Storage:** 1 x 480 GB M.2 NVMe SSD  
- **Other:** None  

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**Software**

- **OS:** Ubuntu 22.04 LTS  
- **Kernel:** 5.15.0-48-generic  
- **Compiler:** C/C++/Fortran: Version 4.0.0 of AOCC  
- **Parallel:** No  
- **Firmware:** Version 1.4 released Apr-2023  
- **File System:** ext4  
- **System State:** Run level 5 (multi-user)  
- **Base Pointers:** 64-bit  
- **Peak Pointers:** 64-bit  
- **Power Management:** BIOS and OS set to prefer performance at the cost of additional power usage.

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## Results Table

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</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 limit
'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>

To limit dirty cache to 8% of memory, "sysctl -w vm.dirty_ratio=8" run as root.
To limit swap usage to minimum necessary, "sysctl -w vm.swappiness=1" run as root.
To free node-local memory and avoid remote memory usage,
'sysctl -w vm.zone_reclaim_mode=1' run as root.
To clear filesystem caches, 'sync; sysctl -w vm.drop_caches=3' run as root.
To disable address space layout randomization (ASLR) to reduce run-to-run variability, 'sysctl -w kernel.randomize_va_space=0' run as root.

To enable Transparent Hugepages (THP) for all allocations,

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SPEC CPU®2017 Floating Point Rate Result

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CloudDC A+ Server AS -2015CS-TNR (H13SSW , AMD EPYC 9754)

| SPECrate®2017_fp_base | 710 |
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CPU2017 License: 001176
Test Sponsor: Supermicro
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Environment Variables Notes

Environment variables set by runcpu before the start of the run:
- LD_LIBRARY_PATH = "/home/cpu2017/amd_rate_aocc400_genoa_B_lib/lib:/home/cpu2017/amd_rate_aocc400_genoa_B_lib/lib32:"
- MALLOC_CONF = "retain:true"

General Notes

Binaries were compiled on a system with 2x AMD EPYC 9174F CPU + 1.5TiB Memory using RHEL 8.6

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.

Platform Notes

BIOS Settings:
NUMA Nodes Per Socket = NPS4
TSME = Disabled
Determinism Control = Manual
Determinism Enable = Disable Performance Determinism
cTDP Control = Manual
cTDP = 400
Package Power Limit Control = Manual
Package Power Limit = 400

Sysinfo program /home/cpu2017/bin/sysinfo
Rev: r6732 of 2022-11-07 fe91c89b7ed5c36ae2c92cc097bec197
running on ssw Fri May 19 10:44:23 2023

SUT (System Under Test) info as seen by some common utilities.

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20. Disk information
21. /sys/devices/virtual/dmi/id
22. dmidecode
23. BIOS

------------------------------------------------------------
------------------------------------------------------------
1. uname -a
   Linux ssw 5.15.0-48-generic #54-Ubuntu SMP Fri Aug 26 13:26:29 UTC 2022 x86_64 x86_64 x86_64 GNU/Linux
------------------------------------------------------------
2. w
   10:44:23 up 8:02, 6 users, load average: 134.34, 223.61, 242.48
   USER     TTY      FROM             LOGIN@   IDLE   JCPU   PCPU WHAT
   ssw      tty1     -                02:50    7:54m  1.87s  0.04s -bash
   ssw      pts/0    -                02:50    7:20m  1.51s  1.82s sudo -i
   ssw      tty2     -                06:41    4:03m  0.20s  0.12s -bash
   ssw      pts/1    -                06:41    4:03m  0.05s  0.02s sudo -i
   ssw      tty3     -                10:32   11:35   0.17s  0.06s -bash
   ssw      pts/2    -                10:32   11:19   0.04s  0.09s sudo -i
------------------------------------------------------------
3. Username
   From environment variable $USER:  root
   From the command 'logname':       ssw

------------------------------------------------------------
4. ulimit -a
   time(seconds)        unlimited
   file(blocks)         unlimited
   data(kbytes)         unlimited
   stack(kbytes)        unlimited
   coredump(blocks)     0
   memory(kbytes)       unlimited
   locked memory(kbytes) 2097152
   process              309471
  nofiles              1024
   vmemory(kbytes)      unlimited
   locks                unlimited
   rtprio               0

------------------------------------------------------------
5. sysinfo process ancestry
   /sbin/init
   /bin/login -p --
     -bash
   sudo -i
   sudo -i
     -bash
   python3 ./run_amd_rate_aocc400_genoa_B1.py
   /bin/bash ./amd_rate_aocc400_genoa_B1.sh
euncpu --config amd_rate_aocc400_genoa_B1.cfg --tune all --reportable --iterations 3 fprate

(Continued on next page)
Platform Notes (Continued)

runcpu --configfile amd_rate_aocc400_genoa_B1.cfg --tune all --reportable --iterations 3 --nopower --runmode rate --tune base:peak --size test:train:refrate --nopreenv --note-preenv --logfile $SPEC/tmp/CPU2017.002/templogs/preenv.fprate.002.0.log --lognum 002.0 --from_runcpu 2 specperl $SPEC/bin/sysinfo

$SPEC = /home/cpu2017

------------------------------------------------------------
6. /proc/cpuinfo

model name: AMD EPYC 9754 128-Core Processor
vendor_id: AuthenticAMD
cpu family: 25
model: 160
stepping: 1
microcode: 0xaa00107
bugs: sysret_ss_attrs spectre_v1 spectre_v2 spec_store_bypass
TLB size: 3584 4K pages
cpu cores: 128
siblings: 256
1 physical ids (chips)
256 processors (hardware threads)
physical id 0: core ids 0-127
physical id 0: apicids 0-255

Caution: /proc/cpuinfo data regarding chips, cores, and threads is not necessarily reliable, especially for virtualized systems. Use the above data carefully.

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(H13SSW , AMD EPYC 9754)

SPEC CPU®2017 Floating Point Rate Result

SPECrate®2017_fp_base = 710
SPECrate®2017_fp_peak = 765

CPU2017 License: 001176
Test Sponsor: Supermicro

Test Date: May-2023
Hardware Availability: Jun-2023

Tested by: Supermicro
Software Availability: Nov-2022

Platform Notes (Continued)

Virtualization: AMD-V

L1d cache: 4 MiB (128 instances)
L1i cache: 4 MiB (128 instances)
L2 cache: 128 MiB (128 instances)
L3 cache: 256 MiB (16 instances)

NUMA node(s): 4
NUMA node0 CPU(s): 0-31,128-159
NUMA node1 CPU(s): 32-63,160-191
NUMA node2 CPU(s): 64-95,192-223
NUMA node3 CPU(s): 96-127,224-255

Vulnerability Itlb multihit: Not affected
Vulnerability L1tf: Not affected
Vulnerability Mds: Not affected
Vulnerability Meltdown: Not affected
Vulnerability Mmio stale data: Not affected
Vulnerability Retbleed: Not affected
Vulnerability Spectre v1: Mitigation; Specialties Store Bypass disabled via prctl and seccomp
Vulnerability Spectre v2: Mitigation; Retpolines, IBPB conditional, IBRS_FW, STIBP always-on, RSB filling
Vulnerability Srbds: Not affected
Vulnerability Tax async abort: Not affected

From lscpu --cache:

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<td>64</td>
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</table>

8. numactl --hardware
NOTE: a numactl 'node' might or might not correspond to a physical chip.

available: 4 nodes (0-3)
node 0 cpus: 0-31,128-159
node 0 size: 193255 MB
node 0 free: 191835 MB
node 1 cpus: 32-63,160-191
node 1 size: 193520 MB
node 1 free: 192234 MB
node 2 cpus: 64-95,192-223
node 2 size: 193520 MB
node 2 free: 192306 MB
node 3 cpus: 96-127,224-255
node 3 size: 193431 MB
node 3 free: 192063 MB
node distances:
node   0   1   2   3
0:  10  12  12  12
1:  12  10  12  12
2:  12  12  10  12
3:  12  12  12  10

9. /proc/meminfo

MemTotal: 792297892 kB

(Continued on next page)
Platform Notes (Continued)

10. who -r
   run-level 5 May 19 02:43

11. Systemd service manager version: systemd 249 (249.11-0ubuntu3)
    Default Target Status
    graphical     degraded

12. Failed units, from systemctl list-units --state=failed
    UNIT LOAD ACTIVE SUB    DESCRIPTION
    * fwupd-refresh.service loaded failed failed Refresh fwupd metadata and update motd
    * systemd-networkd-wait-online.service loaded failed failed Wait for Network to be Configured

13. Services, from systemctl list-unit-files
    STATE UNIT FILES
    enabled ModemManager apparmor blk-availability cloud-config cloud-final cloud-init
    cloud-init-local console-setup cron dmesg e2fsck_reap finalrd getty@ gpu-manager
    grub-common grub-initrd-fallback ibamc irobalance keyboard-setup lm-sensors lvm2-monitor
    lxd-agent multipathd networkd-dispatcher open-iscsi open-vm-tools openibd pollinate rshim
    rsyslog secureboot-db setvtrgb srp_daemon ssh systemd-networkd
    systemd-networkd-wait-online systemd-networkd-systemd-resolved systemd-timesyncd thermald
    ua-reboot-cmds udisks2 ufw vgauth
    enabled-runtime netplan-ovs-cleanup systemd-fack-root systemd-remount-fs
    systemd-boot-check-no-failures systemd-network-generator systemd-sysext
    systemd-time-wait-sync upower
    generated apport mst openipmi opensmd
    indirect uuidd
    masked cryptdisks cryptdisks-early hwclock lvm2 multipath-tools-tools rc rcS screen-cleanupsudo
    x11-common

14. Linux kernel boot-time arguments, from /proc/cmdline
    BOOT_IMAGE=/boot/vmlinuz-5.15.0-48-generic
    root=UUID=aaa09862-790a-4690-90b9-dddf6c6e80a2
    ro

15. cpupower frequency-info
    analyzing CPU 0:
    current policy: frequency should be within 400 MHz and 3.10 GHz.
    The governor "performance" may decide which speed to use
    within this range.
    boost state support:
    Supported: yes
    Active: yes
    Boost States: 0
    Total States: 3
    Pstate-P0: 2250MHz

16. sysctl
    kernel numa_balancing 1
    kernel.randomize_va_space 0
    vm.compaction_proactive_20
   (vm.dirty_background_bytes 0)
    (vm.dirty_background_ratio 10)

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Platform Notes (Continued)

vm.dirty_bytes                      0
vm.dirty_expire_centisecs        3000
vm.dirty_ratio                      8
vm.dirty_writeback_centisecs      500
vm.dirtytime_expire_seconds     43200
vm.extravg_threshold               500
vm.min_unmapped_ratio                1
vm.nr_hugepages                          0
vm.nr_hugepages_mempolicy           0
vm.nr_overcommit_hugepages          0
vm.swappiness                       1
vm.watermark_boost_factor       15000
vm.watermark_scale_factor          10
vm.zone_reclaim_mode               1

17. /sys/kernel/mm/transparent_hugepage
   defrag          [always] defer defer+madvise madvise never
   enabled         [always] madvise never
   hpage_pmd_size  2097152
   shmem_enabled   always within_size advise [never] deny force

18. /sys/kernel/mm/transparent_hugepage/khugepaged
   alloc_sleep_millisecs 60000
   defrag
   max_ptes_none       511
   max_ptes_shared      256
   max_ptes_swap         64
   pages_to_scan       4096
   scan_sleep_millisecs 10000

19. OS release
   From /etc/*-release /etc/*-version
   os-release Ubuntu 22.04 LTS

20. Disk information
   SPEC is set to: /home/cpu2017
   Filesystem     Type  Size  Used Avail Use% Mounted on
   /dev/nvme1n1p3 ext4  438G   24G  392G   6% /

21. /sys/devices/virtual/dmi/id
   Vendor:         Supermicro
   Product:        Super Server
   Product Family: SMC H13
   Serial:         123456789

22. dmidecode
   Additional information from dmidecode 3.3 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:
   12x Micron Technology MTC40F2046S1RC48BA1 64 GB 2 rank 4800

(Continued on next page)
Platform Notes (Continued)

23. BIOS
(This section combines info from /sys/devices and dmidecode.)
BIOS Vendor: American Megatrends International, LLC.
BIOS Version: 1.4
BIOS Date: 04/17/2023
BIOS Revision: 5.27

Compiler Version Notes

<table>
<thead>
<tr>
<th>C</th>
<th>519.lbm_r(base, peak) 538.imagick_r(base, peak) 544.nab_r(base, peak)</th>
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<td>Thread model: posix</td>
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<td>InstalledDir: /opt/AMD/aocc/aocc-compiler-rel-4.0-3206-389/bin</td>
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(Continued on next page)
Supermicro
CloudDC A+ Server AS-2015CS-TNR
(H13SSW, AMD EPYC 9754)

SPECrate®2017_fp_base = 710
SPECrate®2017_fp_peak = 765

CPU2017 License: 001176
Test Sponsor: Supermicro
Tested by: Supermicro
Test Date: May-2023
Hardware Availability: Jun-2023
Software Availability: Nov-2022

Compiler Version Notes (Continued)

Fortran
503.bwaves_r (base, peak) 549.fotonik3d_r (base, peak) 554.roms_r (base, peak)
AMD clang version 14.0.6 (CLANG: AOCC_4.0.0-Build#389 2022_10_07) (based on LLVM Mirror.Version.14.0.6)
Thread model: posix
InstalledDir: /opt/AMD/aocc/aocc-compiler-rel-4.0-3206-389/bin

Fortran, C
521.wrf_r (base, peak) 527.cam4_r (base, peak)
AMD clang version 14.0.6 (CLANG: AOCC_4.0.0-Build#389 2022_10_07) (based on LLVM Mirror.Version.14.0.6)
Target: x86_64-unknown-linux-gnu
Thread model: posix
InstalledDir: /opt/AMD/aocc/aocc-compiler-rel-4.0-3206-389/bin

Base Compiler Invocation

C benchmarks:
clang

C++ benchmarks:
clang++

Fortran benchmarks:
flang

Benchmarks using both Fortran and C:
flang clang

Benchmarks using both C and C++:
clang++ clang

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

Base Portability Flags

503.bwaves_r: -DSPEC_LP64
507.cactuBSSN_r: -DSPEC_LP64
508.namd_r: -DSPEC_LP64
510.parest_r: -DSPEC_LP64

(Continued on next page)
## SPEC CPU®2017 Floating Point Rate Result

**Supermicro**  
CloudDC A+ Server AS-2015CS-TNR  
(H13SSW, AMD EPYC 9754)

**SPECrate®2017_fp_base = 710**  
**SPECrate®2017_fp_peak = 765**

- **CPU2017 License:** 001176  
- **Test Sponsor:** Supermicro  
- **Tested by:** Supermicro

### Base Portability Flags (Continued)

511.povray_r: -DSPEC_LP64  
519.lbm_r: -DSPEC_LP64  
521.wrf_r: -DSPEC_CASE_FLAG -Mbyteswapio -DSPEC_LP64  
526.blender_r: -funsigned-char -DSPEC_LP64  
527.cam4_r: -DSPEC_CASE_FLAG -DSPEC_LP64  
538.imagick_r: -DSPEC_LP64  
544.nab_r: -DSPEC_LP64  
549.fotonik3d_r: -DSPEC_LP64  
554.roms_r: -DSPEC_LP64

### Base Optimization Flags

#### C benchmarks:
- `-m64 -fptol -Wl,-mllvm -Wl,-align-all-nofallthru-blocks=6`  
- `-Wl,-mllvm -Wl,-reduce-array-computations=3`  
- `-Wl,-mllvm -Wl,-ldist-scalar-expand -fenable-aggressive-gather -O3`  
- `-march=znver4 -fveclib=AMDLIBM -ffast-math -fstruct-layout=7`  
- `-mllvm -unroll-threshold=50 -mllvm -inline-threshold=1000`  
- `-fremap-arrays -fstrip-mining -mllvm -reduce-array-computations=3`  
- `-zopt -lamdlibm -lamdalloc -lflang`

#### C++ benchmarks:
- `-m64 -fptol -Wl,-mllvm -Wl,-align-all-nofallthru-blocks=6`  
- `-Wl,-mllvm -Wl,-reduce-array-computations=3`  
- `-Wl,-mllvm -Wl,-x86-use-vzeroupper=false -O3 -march=znver4`  
- `-fveclib=AMDLIBM -ffast-math -mllvm -unroll-threshold=100`  
- `-finline-aggressive -mllvm -loop-unswitch-threshold=200000`  
- `-mllvm -reduce-array-computations=3 -zopt -lamdlibm -lamdalloc -lflang`

#### Fortran benchmarks:
- `-m64 -fptol -Wl,-mllvm -Wl,-align-all-nofallthru-blocks=6`  
- `-Wl,-mllvm -Wl,-reduce-array-computations=3`  
- `-Wl,-mllvm -Wl,-enable-X86-prefetching -O3 -march=znver4`  
- `-fveclib=AMDLIBM -ffast-math -Kieee -Mrecursive -funroll-loops`  
- `-mllvm -lsr-in-nested-loop -mllvm -reduce-array-computations=3`  
- `-fepilog-vectorization-of-inductions -zopt -lamdlibm -lamdalloc -lflang`

#### Benchmarks using both Fortran and C:
- `-m64 -fptol -Wl,-mllvm -Wl,-align-all-nofallthru-blocks=6`  
- `-Wl,-mllvm -Wl,-reduce-array-computations=3`  
- `-Wl,-mllvm -Wl,-enable-X86-prefetching -O3 -march=znver4`  
- `-fveclib=AMDLIBM -ffast-math -fstruct-layout=7`

(Continued on next page)
Supermicro
CloudDC A+ Server AS -2015CS-TNR
(H13SSW , AMD EPYC 9754)

SPECrate®2017_fp_base = 710
SPECrate®2017_fp_peak = 765

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<td>Software Availability: Nov-2022</td>
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Base Optimization Flags (Continued):

-mlvm -unroll-threshold=50 -mlvm -inline-threshold=1000
-fremap-arrays -fstrip-mining -mlvm -reduce-array-computations=3
-zopt -Kieee -Mrecursive -funroll-loops -mlvm -lsr-in-nested-loop
-fepilog-vectorization-of-inductions -lamdlibm -lamdalloc -lflang

-mlvm -unroll-threshold=50 -mlvm -inline-threshold=1000
-fremap-arrays -fstrip-mining -mlvm -reduce-array-computations=3
-zopt -mlvm -unroll-threshold=100 -finline-aggressive
-mlvm -loop-unswitch-threshold=200000 -lamdlibm -lamdalloc -lflang

Base Other Flags

C benchmarks:
-Wno-unused-command-line-argument

C++ benchmarks:
-Wno-unused-command-line-argument

Fortran benchmarks:
-Wno-unused-command-line-argument

Benchmarks using both Fortran and C:
-Wno-unused-command-line-argument

Benchmarks using both C and C++:
-Wno-unused-command-line-argument

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

Benchmarks using Fortran, C, and C++:
-Wno-unused-command-line-argument

Peak Compiler Invocation

C benchmarks:
clang

C++ benchmarks:
clang++

Fortran benchmarks:
flang

Benchmarks using both Fortran and C:
flang clang

Benchmarks using both C and C++:
clang++ clang

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

Peak Portability Flags

Same as Base Portability Flags

Peak Optimization Flags

C benchmarks:

519.lbm_r: basepeak = yes

538.imagick_r: -m64 -flto -Wl,-mlllvm -Wl,-align-all-nofallthru-blocks=6
-Wl,-mlllvm -Wl,-reduce-array-computations=3 -O fastest
-march=znver4 -fveclib=AMDLIBM -ffast-math
-fstruct-layout=7 -mlllvm -unroll-threshold=50
-freemap-arrays -fstrip-mining

(Continued on next page)
Supermicro
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SPECraten®2017_fp_peak = 765

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Peak Optimization Flags (Continued)

538.imagick_r (continued):
-mlirv --inline-threshold=1000
-mlirv --reduce-array-computations=3 -zopt -lamdlib
-ldiralloc

544.nab_r: -m64 -flto -Wl,-mlirv -Wl,-ldist-scalar-expand
-fenable-aggressive-gather -Ofast -march=znver4
-fvclib=AMDLIBM -ffast-math -fstruct-layout=7
-mlirv --unroll-threshold=50 -fremap-arrays -fstrip-mining
-mlirv --inline-threshold=1000
-mlirv --reduce-array-computations=3 -zopt -lamdlib
-ldiralloc

C++ benchmarks:

508.namd_r: -m64 -flto -Wl,-mlirv -Wl,-align-all-nofallthru-blocks=6
-Wl,-mlirv -Wl,-reduce-array-computations=3
-Wl,-mlirv -Wl,-x86-use-vzeroupper=false -Ofast
-march=znver4 -fvclib=AMDLIBM -ffast-math
-finline-aggressive -mlirv --unroll-threshold=100
-mlirv --reduce-array-computations=3 -zopt -lamdlib
-ldiralloc

510.parest_r: -m64 -flto -Wl,-mlirv -Wl,-supress-fmas
-Wl,-mlirv -Wl,-x86-use-vzeroupper=false -Ofast
-march=znver4 -fvclib=AMDLIBM -ffast-math
-finline-aggressive -mlirv --unroll-threshold=100
-mlirv --reduce-array-computations=3 -zopt -lamdlib
-ldiralloc

Fortran benchmarks:

503.bwaves_r: basepeak = yes

549.fotonik3d_r: basepeak = yes

554.roms_r: -m64 -flto -Wl,-mlirv -Wl,-align-all-nofallthru-blocks=6
-Wl,-mlirv -Wl,-reduce-array-computations=3
-Wl,-mlirv -Wl,-enable-X86-prefetching -Ofast
-march=znver4 -fvclib=AMDLIBM -ffast-math -Mrecursive
-mlirv --reduce-array-computations=3
-fepilog-vectorization-of-inductions -zopt -lamdlib
-ldiralloc -lflang

Benchmarks using both Fortran and C:

(Continued on next page)
Supermicro
CloudDC A+ Server AS-2015CS-TNR
(H13SSW, AMD EPYC 9754)

**SPECrate®2017_fp_base = 710**
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Peak Optimization Flags (Continued)

521.wrf_r: -m64 -flto -Wl,-mlllvm -Wl,-align-all-nofallthru-blocks=6
-Wl,-mlllvm -Wl,-reduce-array-computations=3
-Wl,-mlllvm -Wl,-enable-X86-prefetching -Ofast
-march=znver4 -fveclib=AMDLIBM -ffast-math
-fstruct-layout=7 -mlllvm -unroll-threshold=50
-fremap-arrays -fstrip-mining
-mlllvm -inline-threshold=1000
-mlllvm -reduce-array-computations=3 -zopt -Mrecursive
-feplugin-vectorization-of-inductions -lamdlibm -lamdalloc
-lflang

527.cam4_r: -m64 -flto -Wl,-mlllvm -Wl,-align-all-nofallthru-blocks=6
-Wl,-mlllvm -Wl,-reduce-array-computations=3
-Wl,-mlllvm -Wl,-enable-X86-prefetching -Ofast -march=znver4
-fveclib=AMDLIBM -ffast-math -fstruct-layout=7
-mlllvm -unroll-threshold=50 -mlllvm -inline-threshold=1000
-fremap-arrays -mlllvm -reduce-array-computations=3 -zopt
-Kieee -Mrecursive -funroll-loops
-mlllvm -lsr-in-nested-loop
-feplugin-vectorization-of-inductions -lamdlibm -lamdalloc
-lflang

Benchmarks using both C and C++:

511.povray_r: -m64 -flto -Wl,-mlllvm -Wl,-align-all-nofallthru-blocks=6
-Wl,-mlllvm -Wl,-reduce-array-computations=3
-Wl,-mlllvm -Wl,-x86-use-vzeroupper=false -Ofast -march=znver4
-fveclib=AMDLIBM -ffast-math -fstruct-layout=7
-mlllvm -unroll-threshold=50 -mlllvm -inline-threshold=1000
-fremap-arrays -mlllvm -reduce-array-computations=3 -zopt
-mlllvm -unroll-threshold=100 -finline-aggressive
-mlllvm -loop-unswitch-threshold=200000 -lamdlibm
-lamdalloc

526.blender_r: -m64 -flto -Wl,-mlllvm -Wl,-align-all-nofallthru-blocks=6
-Wl,-mlllvm -Wl,-reduce-array-computations=3
-Wl,-mlllvm -Wl,-x86-use-vzeroupper=false -Ofast
-march=znver4 -fveclib=AMDLIBM -ffast-math
-fstruct-layout=7 -mlllvm -unroll-threshold=50
-fremap-arrays -fstrip-mining
-mlllvm -inline-threshold=1000
-mlllvm -reduce-array-computations=3 -zopt
-finline-aggressive -mlllvm -unroll-threshold=100 -lamdlibm
-lamdalloc

(Continued on next page)
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SPECrate®2017_fp_base = 710
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CPU2017 License: 001176
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Test Date: May-2023
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Hardware Availability: Jun-2023
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Peak Optimization Flags (Continued)

Benchmarks using Fortran, C, and C++:
-m64 -flto -W1,-mllvm -W1,-align-all-nofallthru-blocks=6
-W1,-mllvm -W1,-reduce-array-computations=3
-W1,-mllvm -W1,-x86-use-vzeroupper=false -Ofast -march=znver4
-fveclib=AMDLIBM -ffast-math -fstruct-layout=7
-mllvm -unroll-threshold=50 -fremap-arrays -fstrip-mining
-mllvm -inline-threshold=1000 -mllvm -reduce-array-computations=3 -zopt
-mllvm -unroll-threshold=100 -mllvm -loop-unswitch-threshold=200000
-finline-aggressive -faggressive-loop-transform -fvector-transform
-fscalar-transform -frecusive -fepilog-vectorization-of-inductions
-lamdlibm -lmdalloc -lflang

Peak Other Flags

C benchmarks:
-Wno-unused-command-line-argument

C++ benchmarks:
-Wno-unused-command-line-argument

Fortran benchmarks:
-Wno-unused-command-line-argument

Benchmarks using both Fortran and C:
-Wno-unused-command-line-argument

Benchmarks using both C and C++:
-Wno-unused-command-line-argument

Benchmarks using Fortran, C, and C++:
-Wno-unused-command-line-argument

The flags files that were used to format this result can be browsed at
http://www.spec.org/cpu2017/flags/aocc400-flags.html
http://www.spec.org/cpu2017/flags/Supermicro-Platform-Settings-V1.2-Genoa-revC.html

You can also download the XML flags sources by saving the following links:
http://www.spec.org/cpu2017/flags/aocc400-flags.xml
http://www.spec.org/cpu2017/flags/Supermicro-Platform-Settings-V1.2-Genoa-revC.xml
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