Cisco Systems
Cisco UCS C225 M6 (AMD EPYC 7252 8-Core)

CPU2017 License: 9019
Test Sponsor: Cisco Systems
Tested by: Cisco Systems

Threads

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Threads</th>
</tr>
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<tbody>
<tr>
<td>603.bwaves_s</td>
<td>8</td>
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<tr>
<td>607.cactuBSSN_s</td>
<td>8</td>
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<tr>
<td>619.lbm_s</td>
<td>16</td>
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<tr>
<td>621.wrf_s</td>
<td>8</td>
</tr>
<tr>
<td>627.cam4_s</td>
<td>8</td>
</tr>
<tr>
<td>628.pop2_s</td>
<td>8</td>
</tr>
<tr>
<td>638.imagick_s</td>
<td>8</td>
</tr>
<tr>
<td>644.nab_s</td>
<td>16</td>
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<tr>
<td>649.fotonik3d_s</td>
<td>8</td>
</tr>
<tr>
<td>654.roms_s</td>
<td>8</td>
</tr>
</tbody>
</table>

SPECspeed®2017_fp_base = 49.9
SPECspeed®2017_fp_peak = 53.8

Software
OS: SUSE Linux Enterprise Server 15 SP3 (x86_64) kernel version 5.3.18-57-default
Compiler: C/C++/Fortran: Version 3.0.0 of AOCC
Parallel: Yes
Firmware: Version 4.2.1c released Aug-2021
File System: xfs
System State: Run level 3 (multi-user)
Base Pointers: 64-bit
Peak Pointers: 64-bit
Other: jemalloc: jemalloc memory allocator library v5.1.0
Power Management: BIOS and OS set to prefer performance at the cost of additional power usage

Hardware
CPU Name: AMD EPYC 7252
Max MHz: 3200
Nominal: 3100
Enabled: 8 cores, 1 chip, 2 threads/core
Orderable: 1 chips
Cache L1: 32 KB I + 32 KB D on chip per core
L2: 512 KB I+D on chip per core
L3: 64 MB I+D on chip per chip, 16 MB shared / 2 cores
Other: None
Memory: 1 TB (8 x 128 GB 4Rx4 PC4-3200V-L)
Storage: 1 x 960 GB M.2 SSD SATA
Other: None
Cisco Systems
Cisco UCS C225 M6 (AMD EPYC 7252 8-Core)

Results Table

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

SPECspeed®2017_fp_base = 49.9
SPECspeed®2017_fp_peak = 53.8

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
ASLR is disabled to reduce run-to-run issues.

dirty_ratio, swappiness, zone_reclaim_mode, drop_caches and ASLR were all set using privileged echo (e.g. echo 1 > /proc/sys/vm/swappiness).

(Continued on next page)
Cisco Systems
Cisco UCS C225 M6 (AMD EPYC 7252 8-Core)

SPEC CPU®2017 Floating Point Speed Result
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SPECspeed®2017_fp_base = 49.9
SPECspeed®2017_fp_peak = 53.8

CPU2017 License: 9019
Test Sponsor: Cisco Systems
Tested by: Cisco Systems

Test Date: Dec-2021
Hardware Availability: Jun-2021
Software Availability: Jun-2021

Operating System Notes (Continued)
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/amd_speed_aocc300_milan_B_lib/64;/home/cpu2017/amd_speed_aocc300_milan_B_lib/32:"
MALLOC_CONF = "retain:true"
OMP_DYNAMIC = "false"
OMP_SCHEDULE = "static"
OMP_STACKSIZE = "592M"
OMP_THREAD_LIMIT = "16"

Environment variables set by runcpu during the 607.cactuBSSN_s peak run:
GOMP_CPU_AFFINITY = "0-7"

Environment variables set by runcpu during the 619.lbm_s peak run:
GOMP_CPU_AFFINITY = "0 8 1 9 2 10 3 11 4 12 5 13 6 14 7 15"

Environment variables set by runcpu during the 638.imagick_s peak run:
GOMP_CPU_AFFINITY = "0-7"

Environment variables set by runcpu during the 644.nab_s peak run:
GOMP_CPU_AFFINITY = "0 8 1 9 2 10 3 11 4 12 5 13 6 14 7 15"

Environment variables set by runcpu during the 654.roms_s peak run:
GOMP_CPU_AFFINITY = "0-7"

General Notes
Binaries were compiled on a system with 2x AMD EPYC 7742 CPU + 1TiB Memory using openSUSE 15.2

NA: The test sponsor attests, as of date of publication, that CVE-2017-5754 (Meltdown) is mitigated in the system as tested and documented.
Yes: The test sponsor attests, as of date of publication, that CVE-2017-5753 (Spectre variant 1) is mitigated in the system as tested and documented.
Yes: The test sponsor attests, as of date of publication, that CVE-2017-5715 (Spectre variant 2) is mitigated in the system as tested and documented.

jemalloc: configured and built with GCC v4.8.2 in RHEL 7.4 (No options specified)
jemalloc 5.1.0 is available here:
https://github.com/jemalloc/jemalloc/releases/download/5.1.0/jemalloc-5.1.0.tar.bz2
Cisco Systems  | SPEC CPU®2017 Floating Point Speed Result  
Cisco UCS C225 M6 (AMD EPYC 7252 8-Core)  

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**SPECspeed®2017_fp_base = 49.9**  
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**Cisco Systems**

**Cisco UCS C225 M6 (AMD EPYC 7252 8-Core)**

---

**CPU2017 License:** 9019  
**Test Sponsor:** Cisco Systems  
**Tested by:** Cisco Systems  
**Test Date:** Dec-2021  
**Hardware Availability:** Jun-2021  
**Software Availability:** Jun-2021

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**Platform Notes**

- SMT Mode set to Auto  
- NUMA nodes per socket set to NPS1  
- ACPI SRAT L3 Cache As NUMA Domain set to Enabled  
- DRAM Scrub Time set to Disabled  
- Determinism Slider set to Power  
- L1 Stream HW Prefetcher set to Enabled  
- APBDIS set to 1  

**Sysinfo program** /home/cpu2017/bin/sysinfo  
Rev: r6622 of 2021-04-07 982a61ec0915b55891ef0e16aca6ec4d  
running on localhost Sun Dec 19 23:08:32 2021  

**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 7252 8-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 : 8  
  - siblings : 16  
  - physical 0: cores 0 1 4 5 8 9 12 13

**From lscpu from util-linux 2.36.2:**

- **Architecture:** x86_64  
- **CPU op-mode(s):** 32-bit, 64-bit  
- **Byte Order:** Little Endian  
- **Address sizes:** 43 bits physical, 48 bits virtual  
- **CPU(s):** 16  
- **On-line CPU(s) list:** 0-15  
- **Thread(s) per core:** 2  
- **Core(s) per socket:** 8  
- **Socket(s):** 1  
- **NUMA node(s):** 1  
- **Vendor ID:** AuthenticAMD  
- **CPU family:** 23  
- **Model:** 49  
- **Model name:** AMD EPYC 7252 8-Core Processor  
- **Stepping:** 0  
- **Frequency boost:** enabled  
- **CPU MHz:** 3174.116  
- **CPU max MHz:** 3100.0000  
- **CPU min MHz:** 1500.0000  
- **BogoMIPS:** 6188.15

(Continued on next page)
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Virtualization: AMD-V
L1d cache: 256 KiB
L1i cache: 256 KiB
L2 cache: 4 MiB
L3 cache: 64 MiB
NUMA node0 CPU(s): 0-15
Vulnerability Itlb multihit: Not affected
Vulnerability L1f: Not affected
Vulnerability Mds: Not affected
Vulnerability Meltdown: Not affected
Vulnerability Spec store bypass: Mitigation; Speculative Store Bypass disabled via prctl and seccomp
Vulnerability Spectre v1: Mitigation; usercopy/swapgs barriers and __user pointer sanitization
Vulnerability Spectre v2: Mitigation; Full AMD retpoline, IBPB conditional, IBRS_FW, STIBP conditional, RSB filling
Vulnerability Srbds: Not affected
Vulnerability Tsx async abort: Not affected
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 nonstop_tsc cpuid extd_apicid aperf perfstat
From lscpu --cache:
NAME ONE-SIZE ALL-SIZE WAYS TYPE LEVEL SETS PHY-LINE COHERENCY-SIZE
L1d 32K 256K 8 Data 1 64 1 64
L1i 32K 256K 8 Instruction 1 64 1 64
L2 512K 4M 8 Unified 2 1024 1 64
L3 16M 64M 16 Unified 3 16384 1 64

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: 1019477 MB
node 0 free: 1018883 MB

(Continued on next page)
### Cisco Systems

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<tr>
<td>Software Availability:</td>
<td>Jun-2021</td>
</tr>
</tbody>
</table>

### Platform Notes (Continued)

- **node distances:**
  - node 0
  - 0: 10

- From `/proc/meminfo`
  - MemTotal: 1043944764 kB
  - HugePages_Total: 0
  - Hugepagesize: 2048 kB

- `/sys/devices/system/cpu/cpu*/cpufreq/scaling_governor` has performance

- From `/etc/*release* /etc/*version*`
  - os-release:
    - NAME="SLES"
    - VERSION="15-SP3"
    - VERSION_ID="15.3"
    - PRETTY_NAME="SUSE Linux Enterprise Server 15 SP3"
    - ID="sles"
    - ID_LIKE="suse"
    - ANSI_COLOR="0;32"
    - CPE_NAME="cpe:/o:suse:sles:15:sp3"

- `uname -a`:
  - Linux localhost 5.3.18-57-default #1 SMP Wed Apr 28 10:54:41 UTC 2021 (ba3c2e9) x86_64 x86_64 GNU/Linux

- Kernel self-reported vulnerability status:

  - CVE-2018-12207 (iTLB Multihit):
    - Not affected
  - 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/swaps barriers and __user pointer sanitization
  - CVE-2017-5715 (Spectre variant 2):
    - Mitigation: Full AMD retpoline, IBP, conditional, IBRS_FW, STIBP: conditional, RSB filling
  - CVE-2020-0543 (Special Register Buffer Data Sampling):
    - Not affected
  - CVE-2019-11135 (TSX Asynchronous Abort):
    - Not affected

- run-level 3 Dec 19 18:35

(Continued on next page)
Cisco Systems
Cisco UCS C225 M6 (AMD EPYC 7252 8-Core)

| SPECspeed®2017_fp_base | 49.9 |
| SPECspeed®2017_fp_peak | 53.8 |

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Platform Notes (Continued)

SPEC is set to: /home/cpu2017
Filesystem Type Size Used Avail Use% Mounted on
/dev/sda2 xfs 223G 11G 213G 5% /

From /sys/devices/virtual/dmi/id
Vendor: Cisco Systems Inc
Product: UCSC-C225-M6N
Serial: WZP25230TMR

Additional information from dmidecode 3.2 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 0xCE00 M386AAG40AM3-CWE 128 GB 4 rank 3200

BIOS:
BIOS Vendor: Cisco Systems Inc
BIOS Version: C225M6.4.2.1c.0.0806211349
BIOS Date: 08/06/2021
BIOS Revision: 5.14

(End of data from sysinfo program)

Compiler Version Notes

C | 619.lbm_s(base, peak) 638.imagick_s(base, peak)
   644.nab_s(base, peak)

AMD clang version 12.0.0 (CLANG: AOCC_3.0.0-Build#78 2020_12_10) (based on LLVM Mirror.Version.12.0.0)
Target: x86_64-unknown-linux-gnu
Thread model: posix
InstalledDir: /opt/AMD/aocc-compiler-3.0.0/bin

C++, C, Fortran | 607.cactuBSSN_s(base, peak)

AMD clang version 12.0.0 (CLANG: AOCC_3.0.0-Build#78 2020_12_10) (based on LLVM Mirror.Version.12.0.0)
Target: x86_64-unknown-linux-gnu
Thread model: posix
InstalledDir: /opt/AMD/aocc-compiler-3.0.0/bin
AMD clang version 12.0.0 (CLANG: AOCC_3.0.0-Build#78 2020_12_10) (based on
Cisco Systems
Cisco UCS C225 M6 (AMD EPYC 7252 8-Core)

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Software Availability: Jun-2021

Compiler Version Notes (Continued)

LLVM Mirror.Version.12.0.0
Target: x86_64-unknown-linux-gnu
Thread model: posix
InstalledDir: /opt/AMD/aocc-compiler-3.0.0/bin
AMD clang version 12.0.0 (CLANG: AOCC_3.0.0-Build#78 2020_12_10) (based on LLVM Mirror.Version.12.0.0)
Target: x86_64-unknown-linux-gnu
Thread model: posix
InstalledDir: /opt/AMD/aocc-compiler-3.0.0/bin

Fortran         | 603.bwaves_s(base, peak) 649.fotonik3d_s(base, peak)
| 654.roms_s(base, peak)

Fortran, C      | 621.wrf_s(base, peak) 627.cam4_s(base, peak)
| 628.pop2_s(base, peak)

Base Compiler Invocation

C benchmarks:
clang

Fortran benchmarks:
flang

(Continued on next page)
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Base Compiler Invocation (Continued)

Benchmarks using both Fortran and C:
flang clang

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

Base Portability Flags

603.bwaves_s: -DSPEC_LP64
607.cactuBSSN_s: -DSPEC_LP64
619.lbm_s: -DSPEC_LP64
621.wrf_s: -DSPEC_CASE_FLAG -Mbyteswapio -DSPEC_LP64
627.cam4_s: -DSPEC_CASE_FLAG -DSPEC_LP64
628.pop2_s: -DSPEC_CASE_FLAG -Mbyteswapio -DSPEC_LP64
638.imagick_s: -DSPEC_LP64
644.nab_s: -DSPEC_LP64
649.fotonik3d_s: -DSPEC_LP64
654.roms_s: -DSPEC_LP64

Base Optimization Flags

C benchmarks:
-m64 -mno-adx -mno-sse4a -Wl,-mllvm -Wl,-region-vectorize
-Wl,-mllvm -Wl,-function-specialize
-Wl,-mllvm -Wl,-align-all-nofallthru-blocks=6
-Wl,-mllvm -Wl,-reduce-array-computations=3 -O3 -march=znver3
-fveclib=AMDLIBM -ffast-math -flto -fstruct-layout=5
-mllvm -unroll-threshold=50 -mllvm -inline-threshold=1000
-freemap-arrays -mllvm -function-specialize -fiv-function-specialization
-mllvm -enable-gvn-hoist -mllvm -global-vectorize-slp=true
-mllvm -enable-lpm-vrp -mllvm -reduce-array-computations=3 -z muldefs
-DSPEC_OPENMP -fopenmp -fopenmp=libomp -lomp -lamdlibm -ljemalloc
-lflang -lflangrti

Fortran benchmarks:
-m64 -mno-adx -mno-sse4a -Wl,-mllvm -Wl,-enable-X86-prefetching
-Wl,-mllvm -Wl,-enable-lpm-vrp -Wl,-mllvm -Wl,-region-vectorize
-Wl,-mllvm -Wl,-function-specialize
-Wl,-mllvm -Wl,-align-all-nofallthru-blocks=6
-Wl,-mllvm -Wl,-reduce-array-computations=3 -Hz,1,0x1 -O3
-march=znver3 -fveclib=AMDLIBM -ffast-math -Mrecursive
-mllvm -fuse-tile-inner-loop -funroll-loops

(Continued on next page)
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Base Optimization Flags (Continued):

Fortran benchmarks (continued):
-mlvm -extra-vectorizer-passes -mlllvm -lslr-in-nested-loop
-mlllvm -enable-licm-vrp -mlllvm -reduce-array-computations=3
-mlllvm -global-vectorize-slp=true -z muldefs -DSPEC_OPENMP -fopenmp
-fopenmp=libomp -lomp -lamdlibm -ljemalloc -lfliang -lflangrti

Benchmarks using both Fortran and C:
-m64 -mno-adx -mno-sse4a -Wl,-mlllvm -Wl,-enable-X86-prefetching
-Wl,-mlllvm -Wl,-enable-licm-vrp -Wl,-mlllvm -Wl,-region-vectorize
-Wl,-mlllvm -Wl,-function-specialize
-Wl,-mlllvm -Wl,-align-all-nofallthru-blocks=6
-Wl,-mlllvm -Wl,-reduce-array-computations=3 -O3 -arch=znver3
-fveclib=AMDLIBM -ffast-math -flto -fstruct-layout=5
-mlllvm -unroll-threshold=50 -mlllvm -inline-threshold=1000
-fremap-arrays -mlllvm -function-specialize -flv-function-specialization
-mlllvm -enable-gvn-hoist -mlllvm -global-vectorize-slp=true
-mlllvm -enable-licm-vrp -mlllvm -reduce-array-computations=3 -Hz,1,0x1
-Mrecursive -mlllvm -fuse-tile-inner-loop -funroll-loops
-mlllvm -extra-vectorizer-passes -mlllvm -lslr-in-nested-loop -z muldefs
-DSPEC_OPENMP -fopenmp -fopenmp=libomp -lomp -lamdlibm -ljemalloc
-lfliang -lflangrti

Benchmarks using Fortran, C, and C++:
-m64 -mno-adx -mno-sse4a -std=c++98
-Wl,-mlllvm -Wl,-x86-use-vzeroupper=false
-Wl,-mlllvm -Wl,-region-vectorize -Wl,-mlllvm -Wl,-function-specialize
-Wl,-mlllvm -Wl,-align-all-nofallthru-blocks=6
-Wl,-mlllvm -Wl,-reduce-array-computations=3 -O3 -arch=znver3
-fveclib=AMDLIBM -ffast-math -flto -fstruct-layout=5
-mlllvm -unroll-threshold=50 -mlllvm -inline-threshold=1000
-fremap-arrays -mlllvm -function-specialize -flv-function-specialization
-mlllvm -enable-gvn-hoist -mlllvm -global-vectorize-slp=true
-mlllvm -enable-licm-vrp -mlllvm -reduce-array-computations=3
-mlllvm -enable-partial-unswitch -mlllvm -unroll-threshold=100
-finline-aggressive -mlllvm -loop-unswitch-threshold=200000
-mlllvm -rerooll-loops -mlllvm -aggressive-loop-unswitch
-mlllvm -extra-vectorizer-passes -mlllvm -convert-pow-exp-to-int=false
-Hz,1,0x1 -Mrecursive -mlllvm -fuse-tile-inner-loop -funroll-loops
-mlllvm -lslr-in-nested-loop -z muldefs -DSPEC_OPENMP -fopenmp
-fopenmp=libomp -lomp -lamdlibm -ljemalloc -lfliang -lflangrti
## SPEC CPU®2017 Floating Point Speed Result

**Cisco Systems**

Cisco UCS C225 M6 (AMD EPYC 7252 8-Core)

<table>
<thead>
<tr>
<th>SPECspeed®2017_fp_base = 49.9</th>
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<td>SPECspeed®2017_fp_peak = 53.8</td>
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</tbody>
</table>

### Base Other Flags

- **C benchmarks:**
  - `-Wno-unused-command-line-argument` `-Wno-return-type`

- **Fortran benchmarks:**
  - `-Wno-unused-command-line-argument` `-Wno-return-type`

- **Benchmarks using both Fortran and C:**
  - `-Wno-unused-command-line-argument` `-Wno-return-type`

- **Benchmarks using Fortran, C, and C++:**
  - `-Wno-unused-command-line-argument` `-Wno-return-type`

### Peak Compiler Invocation

- **C benchmarks:**
  - `clang`

- **Fortran benchmarks:**
  - `flang`

- **Benchmarks using both Fortran and C:**
  - `flang clang`

- **Benchmarks using Fortran, C, and C++:**
  - `clang++ clang flang`

### Peak Portability Flags

*Same as Base Portability Flags*

### Peak Optimization Flags

**C benchmarks:**

619.lbm_s: `-m64 -mno-adx -mno-sse4a`

- `-Wl,-mllvm -Wl,-function-specialize`
- `-Wl,-mllvm -Wl,-align-all-nofallthru-blocks=6`
- `-Wl,-mllvm -Wl,-reduce-array-computations=3 -Ofast`
- `-march=znver3 -fveclib=AMDLIBM -ffast-math -flto -fstruct-layout=5 -mllvm -unroll-threshold=50`

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

619.lbm_s (continued):
-cremap-arrays -fvl-function-specialization
-mllvm -inline-threshold=1000 -mllvm -enable-gvn-hoist
-mllvm -global-vectorize-slp=true
-mllvm -function-specialize -mllvm -enable-lnicm-vrp
-mllvm -reduce-array-computations=3 -DSPEC_OPENMP -fopenmp
-fopenmp=libomp -lomp -lamdlibm -ljemalloc -lflang

638.imagick_s: Same as 619.lbm_s

644.nab_s: -m64 -mno-adx -mno-sse4a -Wl,-mllvm -Wl,-region-vectorize
-”Wl,-mllvm -Wl,-function-specialize -Ofast -march=znver3
-fveclib=AMDLIBM -ffast-math -fllto -fstruct-layout=5
-mllvm -unroll-threshold=50 -cremap-arrays
-fvl-function-specialization -mllvm -inline-threshold=1000
-mllvm -enable-gvn-hoist -mllvm -global-vectorize-slp=true
-mllvm -function-specialize -mllvm -enable-lnicm-vrp
-mllvm -reduce-array-computations=3 -DSPEC_OPENMP -fopenmp
-fopenmp=libomp -lomp -lamdlibm -ljemalloc -lflang

Fortran benchmarks:
603.bwaves_s: basepeak = yes
649.fotonik3d_s: basepeak = yes

654.roms_s: -m64 -mno-adx -mno-sse4a
-”Wl,-mllvm -Wl,-enable-X86-prefetching
-”Wl,-mllvm -Wl,-enable-lacman-vrp
-”Wl,-mllvm -Wl,-function-specialize
-”Wl,-mllvm -Wl,-align-all-nofallthru-blocks=6
-”Wl,-mllvm -Wl,-reduce-array-computations=3  -Ofast
-march=znver3 -fveclib=AMDLIBM -ffast-math -Mrecursive
-mllvm -reduce-array-computations=3
-mllvm -global-vectorize-slp=true -mllvm -enable-lnicm-vrp
-DSPEC_OPENMP -fopenmp -fopenmp=libomp -lomp -lamdlibm
-ljemalloc -lflang

Benchmarks using both Fortran and C:
621.wrf_s: basepeak = yes
627.cam4_s: basepeak = yes
628.pop2_s: basepeak = yes

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### Peak Optimization Flags (Continued)

Benchmarks using Fortran, C, and C++:
- -m64 -mno-adx -mno-sse4a -std=c++98
- -Wl,-mllvm -Wl,-x86-use-vzeroupper=false -Wl,-mllvm -Wl,-enable-licm-VRP
- -Wl,-mllvm -Wl,-function-specialize
- -Wl,-mllvm -Wl,-align-all-nofallthru-blocks=6
- -Wl,-mllvm -Wl,-reduce-array-computations=3 -Ofast -march=znver3
- -fveclib=AMDLIBM -ffast-math -flto -fstruct-layout=5
- -mllvm -unroll-threshold=50 -fremap-arrays -flv-function-specialization
- -mllvm -inline-threshold=1000 -mllvm -enable-gvn-hoist
- -mllvm -global-vectorize-slp=true -mllvm -function-specialize
- -mllvm -enable-licm-VRP -mllvm -reduce-array-computations=3
- -finline-aggressive -mllvm -unroll-threshold=100 -mllvm -reroll-loops
- -mllvm -aggressive-loop-unswitch -Mrecursive -DSPEC_OPENMP -fopenmp
- -fopenmp=libomp -lomp -lamdlibm -ljemalloc -lflang

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### Peak Other Flags

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

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

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

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

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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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