Cisco Systems
Cisco UCS C225 M6 (AMD EPYC 74F3 24-Core)

CPU2017 License: 9019
Test Sponsor: Cisco Systems
Tested by: Cisco Systems
Software Availability: Jun-2021

Hardware
CPU Name: AMD EPYC 74F3
Max MHz: 4000
Nominal: 3200
Enabled: 24 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: 256 MB I+D on chip per chip, 32 MB shared / 3 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

Software
OS: SUSE Linux Enterprise Server 15 SP3 (x86_64)
kernell version 5.3.18-57-default
Compiler: C/C++/Fortran: Version 3.0.0 of AOCC
Parallel: No
Firmware: Version 4.2.1c released Aug-2021
File System: xfs
System State: Run level 3 (multi-user)
Base Pointers: 64-bit
Peak Pointers: 32/64-bit
Power Management: BIOS and OS set to prefer performance at the cost of additional power usage

SPECrate®2017_int_base = 234
SPECrate®2017_int_peak = 241

SPEC CPU®2017 Integer Rate Result
Copyright 2017-2021 Standard Performance Evaluation Corporation
## SPEC CPU®2017 Integer Rate Result

### Cisco Systems

Cisco UCS C225 M6 (AMD EPYC 74F3 24-Core)  

**SPECrate®2017_int_base = 234**  
**SPECrate®2017_int_peak = 241**

### Results Table

<table>
<thead>
<tr>
<th>Benchmark</th>
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</tr>
</tbody>
</table>

### Compiler Notes

The AMD64 AOCC Compiler Suite is available at  

### 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.

(Continued on next page)
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Cisco UCS C225 M6 (AMD EPYC 74F3 24-Core)

<table>
<thead>
<tr>
<th>SPECrate®2017_int_base = 234</th>
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<td>CPU2017 License: 9019</td>
<td>Test Date: Nov-2021</td>
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<tr>
<td>Test Sponsor: Cisco Systems</td>
<td>Hardware Availability: Jun-2021</td>
</tr>
<tr>
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<td>Software Availability: Jun-2021</td>
</tr>
</tbody>
</table>

**Operating System Notes (Continued)**

To enable Transparent Hugepages (THP) only on request for base runs, 'echo madvise > /sys/kernel/mm/transparent_hugepage/enabled' run as root.
To enable THP for all allocations for peak runs, 'echo always > /sys/kernel/mm/transparent_hugepage/enabled' and 'echo always > /sys/kernel/mm/transparent_hugepage/defrag' run as root.

**Environment Variables Notes**

Environment variables set by runcpu before the start of the run:
```
LD_LIBRARY_PATH =
    "/home/cpu2017/amd_rate_aocc300_milan_B_lib/lib;/home/cpu2017/amd_rate_aocc300_milan_B_lib/lib32:"
MALLOCMALLOC_CONF = "retain:true"
```

Environment variables set by runcpu during the 523.xalancbmk_r peak run:
```
MALLOCMALLOC_CONF = "thp:never"
```

**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

**Platform Notes**

BIOS Configuration
SMT Mode set to Auto
NUMA nodes per socket set to NPS4
ACPI SRAT L3 Cache As NUMA Domain set to Enabled
DRAM Scrub Time set to Disabled
Determinism Slider set to Power
Memory Interleaving set to Auto
APBDIS set to 1

(Continued on next page)
Cisco Systems

Cisco UCS C225 M6 (AMD EPYC 74F3 24-Core)

| SPECrate®2017_int_base = 234 |
| SPECrate®2017_int_peak = 241 |

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

Platform Notes (Continued)

Sysinfo program /home/cpu2017/bin/sysinfo
Rev: r6622 of 2021-04-07 982a61ec0915b55891ef0e16acaf64d
running on localhost Thu Nov 11 08:46:20 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 74F3 24-Core Processor
  1 "physical id"s (chips)
  48 "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 : 48
physical 0: cores 0 1 2 4 5 6 8 9 10 12 13 14 16 17 18 20 21 22 24 25 26 28 29 30

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: 48 bits physical, 48 bits virtual
CPU(s): 48
On-line CPU(s) list: 0-2,24-26
Thread(s) per core: 2
Core(s) per socket: 24
Socket(s): 1
NUMA node(s): 8
Vendor ID: AuthenticAMD
CPU family: 25
Model: 1
Model name: AMD EPYC 74F3 24-Core Processor
Stepping:
Frequency boost: enabled
CPU MHz: 1305.778
CPU max MHz: 3200.0000
CPU min MHz: 1500.0000
BogoMIPS: 6387.84
Virtualization: AMD-V
L1d cache: 768 KiB
L1i cache: 768 KiB
L2 cache: 12 MiB
L3 cache: 256 MiB
NUMA node0 CPU(s): 0-2,24-26
NUMA node1 CPU(s): 3-5,27-29

(Continued on next page)
Cisco Systems

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Platform Notes (Continued)

NUMA node2 CPU(s): 6–8,30–32
NUMA node3 CPU(s): 9–11,33–35
NUMA node4 CPU(s): 12–14,36–38
NUMA node5 CPU(s): 15–17,39–41
NUMA node6 CPU(s): 18–20,42–44
NUMA node7 CPU(s): 21–23,45–47
Vulnerability Itlb multihit: Not affected
Vulnerability L1tf: 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 always-on, RSB filling
Vulnerability Srbd: Not affected
Vulnerability Tsx abort: Not affected
Flags: fpu vme de pse tsc msr pae mce cx8 apic sep mtrr pge mca cmov pat pse3 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 perfctr_core perfctr_nb bext perfctr_l1c mwaitx cpb cat_l3 cdp_l3 invpcid_single hw_pstate ssbd mba ibrs ibpb stibp vmmcall fsgsbase bml1 avx2 smep bmi2 invpcid cqm rdt_a rdtad adx smap clflushopt clwb sha ni xsaveopt xsavec xsave xsavec xsaveopt xsaveopt xsaveopt xsaves cmqm_llc cmqm_occp_llc cmqm_mb_total cmqm_mb_local clzero irperft imeaverpr wbnoinvd amd_pini arat npt lbv svm_lock nrip_save tsc_scale vmcb_clean flushbyasid decodeassists pausefilter pfthreshold v_vmsave_vmload vgif umip pku ospke vaes vpclmulqdq rdpid overflow_recov succor smca

From lscpu --cache:
NAME ONE-SIZE ALL-SIZE WAYS TYPE LEVEL SETS PHY-LINE COHERENCY-SIZE
L1d 32K 768K 8 Data 1 64 1 64
L1i 32K 768K 8 Instruction 1 64 1 64
L2 512K 12M 8 Unified 2 1024 1 64
L3 32M 256M 16 Unified 3 32768 1 64

From numactl --hardware
WARNING: a numactl 'node' might or might not correspond to a physical chip.
available: 8 nodes (0-7)
node 0 cpus: 0 1 2 24 25 26
node 0 size: 128838 MB

(Continued on next page)
### Platform Notes (Continued)

- node 0 free: 128519 MB
- node 1 cpus: 3 4 5 27 28 29
- node 1 size: 129020 MB
- node 1 free: 128872 MB
- node 2 cpus: 6 7 8 30 31 32
- node 2 size: 129022 MB
- node 2 free: 128857 MB
- node 3 cpus: 9 10 11 33 34 35
- node 3 size: 129020 MB
- node 3 free: 128874 MB
- node 4 cpus: 12 13 14 36 37 38
- node 4 size: 128988 MB
- node 4 free: 128824 MB
- node 5 cpus: 15 16 17 39 40 41
- node 5 size: 129020 MB
- node 5 free: 128791 MB
- node 6 cpus: 18 19 20 42 43 44
- node 6 size: 129022 MB
- node 6 free: 128791 MB
- node 7 cpus: 21 22 23 45 46 47
- node 7 size: 129008 MB
- node 7 free: 128857 MB

### From /proc/meminfo

| MemTotal:       | 1056706860 kB   |
| HugePages_Total: | 0               |
| Hugepagesize:   | 2048 kB         |

### /sys/devices/system/cpu/cpu*/cpufreq/scaling_governor has ondemand

From /etc/*release* /etc/*version*

```
NAME="SLES"
VERSION="15-SP3"
VERSION_ID="15.3"
PRETTY_NAME="SUSE Linux Enterprise Server 15 SP3"
```
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Platform Notes (Continued)

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 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): Mitigation: Speculative Store Bypass disabled via prctl and seccomp
CVE-2018-3639 (Speculative Store Bypass): Mitigation: usercopy/swapgs barriers and __user pointer sanitation
CVE-2017-5753 (Spectre variant 1): Mitigation: Full AMD retpoline, IBFB: conditional, IBRS_FW, STIBP: always-on, RSB filling
CVE-2017-5715 (Spectre variant 2):
CVE-2020-0543 (Special Register Buffer Data Sampling): Not affected
CVE-2019-11135 (TSX Asynchronous Abort): Not affected

run-level 3 Nov 11 08:41
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.
Cisco Systems
Cisco UCS C225 M6 (AMD EPYC 74F3 24-Core)

**SPECrerate®2017_int_base = 234**
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CPU2017 License: 9019
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**Platform Notes (Continued)**

- BIOS Version: C225M6.4.2.1c.0.0806211349
- BIOS Date: 08/06/2021
- BIOS Revision: 5.22

(End of data from sysinfo program)

**Compiler Version Notes**

```
C       | 502.gcc_r(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: i386-unknown-linux-gnu
Thread model: posix
InstalledDir: /opt/AMD/aocc-compiler-3.0.0/bin

C       | 500.perlbench_r(base, peak) 502.gcc_r(base) 505.mcf_r(base, peak) 525.x264_r(base, peak) 557.xz_r(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       | 502.gcc_r(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)
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Compiler Version Notes (Continued)

Thread model: posix
InstalledDir: /opt/AMD/aocc-compiler-3.0.0/bin

---

C++ | 523.xalancbmk_r(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: i386-unknown-linux-gnu
Thread model: posix
InstalledDir: /opt/AMD/aocc-compiler-3.0.0/bin

---

C++ | 520.omnetpp_r(base, peak) 523.xalancbmk_r(base)
531.deepsjeng_r(base, peak) 541.leela_r(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++ | 523.xalancbmk_r(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: i386-unknown-linux-gnu
Thread model: posix
InstalledDir: /opt/AMD/aocc-compiler-3.0.0/bin

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C++ | 520.omnetpp_r(base, peak) 523.xalancbmk_r(base)
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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
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InstalledDir: /opt/AMD/aocc-compiler-3.0.0/bin

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(Continued on next page)
## Cisco Systems

Cisco UCS C225 M6 (AMD EPYC 74F3 24-Core)

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### SPEC CPU®2017 Integer Rate Result

**SPECrate®2017_int_base = 234**

**SPECrate®2017_int_peak = 241**

#### Compiler Version Notes (Continued)

**Fortran | 548.exchange2_r(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

---

## Base Compiler Invocation

**C benchmarks:**

- clang

**C++ benchmarks:**

- clang++

**Fortran benchmarks:**

- fflang

---

## Base Portability Flags

- 500.perlbench_r: -DSPEC_LINUX_X64 -DSPEC_LP64
- 502.gcc_r: -DSPEC_LP64
- 505.mcf_r: -DSPEC_LP64
- 520.omnetpp_r: -DSPEC_LP64
- 523.xalancbmk_r: -DSPEC_LINUX -DSPEC_LP64
- 525.x264_r: -DSPEC_LP64
- 531.deepsjeng_r: -DSPEC_LP64
- 541.lua_r: -DSPEC_LP64
- 548.exchange2_r: -DSPEC_LP64
- 557.xz_r: -DSPEC_LP64

---

## Base Optimization Flags

**C benchmarks:**

- -m64
- -Wl,-allow-multiple-definition
- -Wl,-mlvm
- -Wl,-enable-licm-vrp
- -fllto
- -Wl,-mlvm
- -Wl,-region-vectorize
- -Wl,-mlvm
- -Wl,-function-specialize
- -Wl,-mlvm
- -Wl,-align-all-nofallthru-blocks=6
- -Wl,-mlvm
- -Wl,-reduce-array-computations=3
- -O3
- -ffast-math

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Cisco UCS C225 M6 (AMD EPYC 74F3 24-Core)

SPEC CPU®2017 Integer Rate Result
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SPECrate®2017_int_base = 234
SPECrate®2017_int_peak = 241

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

Base Optimization Flags (Continued):

C benchmarks (continued):
-march=znver3 -fveclib=AMDLIBM -fstruct-layout=5
-mlirunroll-threshold=50 -mliruninline-threshold=1000
-fremap-arrays -mlirunfunction-specialize -flv-function-specialization
-mlirunenable-gvn-hoist -mlirunenablereduce-array-computations=3 -z muldefs
-lamdlibm -ljemalloc -lflang -lflangrti

C++ benchmarks:
-m64 -std=c++98 -Wl,-mlirun -Wl,-do-block-reorder=aggressive -flto
-Wl,-mlirun -Wl,-region-vectorize -Wl,-mlirun -Wl,-function-specialize
-Wl,-mlirun -Wl,-align-all-nofallthru-blocks=6
-Wl,-mlirun -Wl,-reduce-array-computations=3 -O3 -ffast-math
-march=znver3 -fveclib=AMDLIBM -mlirun -enable-partial-unswitch
-mlirununroll-threshold=100 -finline-aggressive
-flv-function-specialization -mlirun -loop-unswitch-threshold=200000
-mlirunreroll-loops -mlirun -aggressive-loop-unswitch
-mlirunextra-vectorizer-passes -mlirun -reduce-array-computations=3
-mlirun -global-vectorize-slp=true -mlirun -convert-pow-exp-to-int=false
-z muldefs -mlirun -do-block-reorder=aggressive
-flvirtual-function-elimination -fvisibility=hidden -lamdlibm
-ljemalloc -lflang -lflangrti

Fortran benchmarks:
-m64 -Wl,-mlirun -Wl,-inline-recursion=4
-Wl,-mlirun -Wl,-isr-in-nested-loop -Wl,-mlirun -Wl,-enable-iv-split
-flto -Wl,-mlirun -Wl,-region-vectorize
-Wl,-mlirun -Wl,-function-specialize
-Wl,-mlirun -Wl,-align-all-nofallthru-blocks=6
-Wl,-mlirun -Wl,-reduce-array-computations=3 -O3 -ffast-math
-march=znver3 -fveclib=AMDLIBM -z muldefs -mlirun -unroll-aggressive
-mlirun -unroll-threshold=500 -lamdlibm -ljemalloc -lflang -lflangrti

Base Other Flags

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

C++ benchmarks:
-Wno-unused-command-line-argument
**SPEC CPU®2017 Integer Rate Result**

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### Peak Compiler Invocation

**C benchmarks:**  
clang

**C++ benchmarks:**  
clang++

**Fortran benchmarks:**  
flang

### Peak Portability Flags

- `500.perlbench_r: -DSPEC_LINUX_X64 -DSPEC_LP64`
- `502.gcc_r: -D_FILE_OFFSET_BITS=64`
- `505.mcf_r: -DSPEC_LP64`
- `520.omnetpp_r: -DSPEC_LP64`
- `523.xalancbmk_r: -DSPEC_LINUX -DSPEC_LP64`
- `525.x264_r: -DSPEC_LP64`
- `531.deepsjeng_r: -DSPEC_LP64`
- `541.leela_r: -DSPEC_LP64`
- `548.exchange2_r: -DSPEC_LP64`
- `557.xz_r: -DSPEC_LP64`

### Peak Optimization Flags

**C benchmarks:**

- `500.perlbench_r: -m64 -Wl,-allow-multiple-definition`  
- `-Wl,-mlir -Wl,-enable-licm-vrp -flto`  
- `-Wl,-mlir -Wl,-function-specialize`  
- `-Wl,-mlir -Wl,-align-all-nofallthru-blocks=6`  
- `-Wl,-mlir -Wl,-reduce-array-computations=3`  
- `-fprofile-instr-generate(pass 1)`  
- `-fprofile-instr-use(pass 2) -Ofast -march=znver3`  
- `-fveclib=AMDLIBM -fstruct-layout=7`  
- `-mlir -unroll-threshold=50 -fremap-arrays`  
- `-flv-function-specialization -mlir -inline-threshold=1000`  
- `-mlir -enable-gvn-hoist -mlir -global-vectorize-slp=false`  
- `-mlir -function-specialize -mlir -enable-licm-vrp`  
- `-mlir -reduce-array-computations=3 -lamdlibm -ljemalloc`

- `502.gcc_r: -m32 -Wl,-allow-multiple-definition`  
- `-Wl,-mlir -Wl,-enable-licm-vrp -flto`

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Peak Optimization Flags (Continued)

502.gcc_r (continued):
- W1,-mllvm -W1,-function-specialize -Ofast -march=znver3
- fveclib=AMDLIBM -fstruct-layout=7
- 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-llicm-vrp
- mllvm -reduce-array-computations=3 -fgnu89-inline
- ljemalloc

505.mcf_r: basepeak = yes
525.x264_r: basepeak = yes
557.xz_r: -m64 -W1,-allow-multiple-definition
- W1,-mllvm -W1,-enable-llicm-vrp -flto
- W1,-mllvm -W1,-function-specialize
- W1,-mllvm -W1,-align-all-nofallthru-blocks=6
- W1,-mllvm -W1,-reduce-array-computations=3 -Ofast
- 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-llicm-vrp
- mllvm -reduce-array-computations=3 -lamdlibm -ljemalloc

C++ benchmarks:

520.omnetpp_r: basepeak = yes
523.xalancbmk_r: -m32 -W1,-mllvm -W1,-do-block-reorder=aggressive -flto
- W1,-mllvm -W1,-function-specialize
- W1,-mllvm -W1,-align-all-nofallthru-blocks=6
- W1,-mllvm -W1,-reduce-array-computations=3 -Ofast
- mllvm -unroll-threshold=50 -fremap-arrays
- flv-function-specialization -mllvm -inline-aggressive
- mllvm -reduce-array-computations=3 -flv-function-specialization
- mllvm -disable-llicm-vrp -mllvm -reroll-loops
- mllvm -aggressive-loop-unswitch
- mllvm -reduce-array-computations=3
- mllvm -global-vectorize-slp=true
- mllvm -do-block-reorder=aggressive
- fvirtual-function-elimination -fvisibility=hidden
- ljemalloc

531.deepsjeng_r: basepeak = yes

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Peak Optimization Flags (Continued)

541.leela_r: -m64 -std=c++98
-Wl,-mlvm -Wl,-do-block-reorder=aggressive -flto
-Wl,-mlvm -Wl,-function-specialize
-Wl,-mlvm -Wl,-align-all-nofallthru-blocks=6
-Wl,-mlvm -Wl,-reduce-array-computations=3 -Ofast
-march=znver3 -fveclib=AMDLIBM -finline-aggressive
-mlvm -unroll-threshold=100 -flv-function-specialization
-mlvm -enable-licm-vrp -mlvm -reroll-loops
-mlvm -aggressive-loop-unswitch
-mlvm -reduce-array-computations=3
-mlvm -global-vectorize-slp=true
-mlvm -do-block-reorder=aggressive
-fvirtual-function-elimination -fvisibility=hidden
-lamdlibm -ljemalloc

Fortran benchmarks:

548.exchange2_r: basepeak = yes

Peak Other Flags

C benchmarks (except as noted below):
-Wno-unused-command-line-argument

502.gcc_r: -L/usr/lib -Wno-unused-command-line-argument
-L/sppo/bin/cpu2017v115aocc3/amd_rate_aocc300_milan_A_lib/32

C++ benchmarks (except as noted below):
-Wno-unused-command-line-argument

523.xalancbmk_r: -L/usr/lib -Wno-unused-command-line-argument
-L/sppo/bin/cpu2017v115aocc3/amd_rate_aocc300_milan_A_lib/32

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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