## SPEC CPU®2017 Integer Rate Result

### Cisco Systems
Cisco UCS C225 M6 (AMD EPYC 75F3 32-Core Processor)

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

### Copies

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<thead>
<tr>
<th>SPECrate®2017_int_base = 587</th>
<th>SPECrate®2017_int_peak = 608</th>
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<tr>
<td>557.xz_r 128</td>
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</table>

### Hardware

- **CPU Name:** AMD EPYC 75F3
- **Max MHz:** 4000
- **Nominal:** 2950
- **Enabled:** 64 cores, 2 chips, 2 threads/core
- **Orderable:** 1.2 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 / 4 cores
- **Other:** None
- **Memory:** 2 TB (16 x 128 GB 4Rx4 PC4-3200V-L)
- **Storage:** 1 x 1.6 TB NVMe SSD
- **Other:** None

### 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:** No
- **Firmware:** Version C225M6.4.2.1c released Sep-2021
- **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 and OS set to prefer performance at the cost of additional power usage
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Results Table

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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 limit
'ulimit -l 2097152' was used to set environment locked pages in memory limit
runcpu command invoked through numacll i.e.:
numactl --interleave=all runcpu <etc>
'echo 8 > /proc/sys/vm/dirty_ratio' run as root to limit dirty cache to 8% of memory.
'echo 1 > /proc/sys/vm/swappiness' run as root to limit swap usage to minimum necessary.
'echo 1 > /proc/sys/vm/zone_reclaim_mode' run as root to free node-local memory and avoid remote memory usage.
'echo 3 > /proc/sys/vm/drop_caches' run as root to reset filesystem caches.
'sysctl -w kernel.randomize_va_space=0' run as root to disable address space layout randomization (ASLR) to reduce run-to-run variability.

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Operating System Notes (Continued)
'echo always > /sys/kernel/mm/transparent_hugepage/defrag' run as root for peak integer runs and all FP runs to enable Transparent Hugepages (THP).

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:"
MALLOC_CONF = "retain:true"

Environment variables set by runcpu during the 523.xalancbmk_r peak run:
MALLOC_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

Sysinfo program /home/cpu2017/bin/sysinfo
Rev: r6622 of 2021-04-07 982a61ec0915b55891ef0e16acafc64d

(Continued on next page)
Platform Notes (Continued)

running on localhost Sun Sep 19 17:05:49 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 75F3 32-Core Processor
  2 "physical id"s (chips)
  128 "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 : 32
siblings : 64
  physical 0: cores 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31
  physical 1: cores 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31

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):                          128
On-line CPU(s) list:             0-127
Thread(s) per core:              2
Core(s) per socket:              32
Socket(s):                       2
NUMA node(s):                    16
Vendor ID:                       AuthenticAMD
CPU family:                      25
Model:                           1
Model name:                      AMD EPYC 75F3 32-Core Processor
Stepping:                        1
Frequency boost:                 enabled
CPU MHz:                         1497.072
CPU max MHz:                     2950.0000
CPU min MHz:                     1500.0000
BogoMIPS:                        5888.94
Virtualization:                  AMD-V
L1d cache:                       2 MiB
L1i cache:                       2 MiB
L2 cache:                        32 MiB
L3 cache:                        512 MiB
NUMA node0 CPU(s):               0-3,64-67
NUMA node1 CPU(s):               4-7,68-71

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Platform Notes (Continued)

NUMA node2 CPU(s): 8-11, 72-75
NUMA node3 CPU(s): 12-15, 76-79
NUMA node4 CPU(s): 16-19, 80-83
NUMA node5 CPU(s): 20-23, 84-87
NUMA node6 CPU(s): 24-27, 88-91
NUMA node7 CPU(s): 28-31, 92-95
NUMA node8 CPU(s): 32-35, 96-99
NUMA node9 CPU(s): 36-39, 100-103
NUMA node10 CPU(s): 40-43, 104-107
NUMA node11 CPU(s): 44-47, 108-111
NUMA node12 CPU(s): 48-51, 112-115
NUMA node13 CPU(s): 52-55, 116-119
NUMA node14 CPU(s): 56-59, 120-123
NUMA node15 CPU(s): 60-63, 124-127

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 async abort: Not affected

Flags:

From lscpu --cache:

(Continued on next page)
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Platform Notes (Continued)

/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: 16 nodes (0-15)
  node 0 cpus: 0 1 2 3 64 65 66 67
  node 0 size: 128837 MB
  node 0 free: 128606 MB
  node 1 cpus: 4 5 6 7 68 69 70 71
  node 1 size: 129019 MB
  node 1 free: 128879 MB
  node 2 cpus: 8 9 10 11 72 73 74 75
  node 2 size: 129021 MB
  node 2 free: 128621 MB
  node 3 cpus: 12 13 14 15 76 77 78 79
  node 3 size: 129019 MB
  node 3 free: 128871 MB
  node 4 cpus: 16 17 18 19 80 81 82 83
  node 4 size: 129021 MB
  node 4 free: 128871 MB
  node 5 cpus: 20 21 22 23 84 85 86 87
  node 5 size: 129019 MB
  node 5 free: 128875 MB
  node 6 cpus: 24 25 26 27 88 89 90 91
  node 6 size: 129021 MB
  node 6 free: 128883 MB
  node 7 cpus: 28 29 30 31 92 93 94 95
  node 7 size: 129007 MB
  node 7 free: 128871 MB
  node 8 cpus: 32 33 34 35 96 97 98 99
  node 8 size: 129021 MB
  node 8 free: 128855 MB
  node 9 cpus: 36 37 38 39 100 101 102 103
  node 9 size: 129019 MB
  node 9 free: 128824 MB
  node 10 cpus: 40 41 42 43 104 105 106 107
  node 10 size: 129021 MB
  node 10 free: 128803 MB
  node 11 cpus: 44 45 46 47 108 109 110 111
  node 11 size: 128985 MB
  node 11 free: 128837 MB
  node 12 cpus: 48 49 50 51 112 113 114 115
  node 12 size: 129021 MB
  node 12 free: 128838 MB
  node 13 cpus: 52 53 54 55 116 117 118 119
  node 13 size: 129019 MB

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**Platform Notes (Continued)**

node 13 free: 128872 MB
node 14 cpus: 56 57 58 59 120 121 122 123
node 14 size: 129021 MB
node 14 free: 128847 MB
node 15 cpus: 60 61 62 63 124 125 126 127
node 15 size: 129019 MB
node 15 free: 128869 MB
node distances:

```
node   0   1   2   3   4   5   6   7   8   9  10  11  12  13  14  15
0:  10  11  12  12  12  12  12  12  32  32  32  32  32  32  32  32
1:  11  10  12  12  12  12  12  12  32  32  32  32  32  32  32  32
2:  12  12  11  10  12  12  12  12  32  32  32  32  32  32  32  32
3:  12  12  11  10  12  12  12  12  32  32  32  32  32  32  32  32
4:  12  12  12  12  10  11  12  12  32  32  32  32  32  32  32  32
5:  12  12  12  12  11  10  12  12  32  32  32  32  32  32  32  32
6:  12  12  12  12  12  12  10  11  32  32  32  32  32  32  32  32
7:  12  12  12  12  12  12  11  10  32  32  32  32  32  32  32  32
8:  32  32  32  32  32  32  32  32  10  11  12  12  12  12  12  12
9:  32  32  32  32  32  32  32  32  10  11  12  12  12  12  12  12
10: 32  32  32  32  32  32  32  32  11  10  12  12  12  12  12  12
11: 32  32  32  32  32  32  32  32  12  12  11  10  12  12  12  12
12: 32  32  32  32  32  32  32  32  12  12  12  12  12  12  11  10
13: 32  32  32  32  32  32  32  32  12  12  12  12  12  12  11  10
14: 32  32  32  32  32  32  32  32  12  12  12  12  12  12  10  11
15: 32  32  32  32  32  32  32  32  12  12  12  12  12  12  11  10
```

From /proc/meminfo
MemTotal: 2113640512 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"
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

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Platform Notes (Continued)

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/swapgs barriers and __user pointer sanitization
CVE-2017-5715 (Spectre variant 2): Mitigation: Full AMD retopline, IBPB: conditional, IBRS_FW, STIBP: always-on, RSB filling
CVE-2020-0543 (Special Register Buffer Data Sampling): Not affected
CVE-2019-11135 (TSX Asynchronous Abort): Not affected

run-level 3 Sep 19 17:03

SPEC is set to: /home/cpu2017
Filesystem Type  Size  Used Avail Use% Mounted on
/dev/nvme0n1p3 xfs  1.5T   12G  1.5T   1% /

From /sys/devices/virtual/dmi/id
Vendor: Cisco Systems Inc
Product: UCSC-C225-M6N
Serial: WZP25230TMY

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:
16x 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: 5.22

(End of data from sysinfo program)
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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)
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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
Thread model: posix
InstalledDir: /opt/AMD/aocc-compiler-3.0.0/bin

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Hardware Availability: Jun-2021
Software Availability: Jun-2021

Compiler Version Notes (Continued)

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

==============================================================================
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

==============================================================================
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
### SPEC CPU®2017 Integer Rate Result

**Cisco Systems**
Cisco UCS C225 M6 (AMD EPYC 75F3 32-Core Processor)  

<table>
<thead>
<tr>
<th>CPU2017 License:</th>
<th>9019</th>
<th>Test Date:</th>
<th>Sep-2021</th>
</tr>
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<tbody>
<tr>
<td>Test Sponsor:</td>
<td>Cisco Systems</td>
<td>Hardware Availability:</td>
<td>Jun-2021</td>
</tr>
<tr>
<td>Tested by:</td>
<td>Cisco Systems</td>
<td>Software Availability:</td>
<td>Jun-2021</td>
</tr>
</tbody>
</table>

**SPECrate®2017_int_base = 587**  
**SPECrate®2017_int_peak = 608**

### Base Compiler Invocation

- **C benchmarks:** clang  
- **C++ benchmarks:** clang++  
- **Fortran benchmarks:** flang

### Base Portability Flags

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Flags</th>
</tr>
</thead>
<tbody>
<tr>
<td>500.perlbench_r</td>
<td>-DSPEC_LINUX_X64 -DSPEC_LP64</td>
</tr>
<tr>
<td>502.gcc_r</td>
<td>-DSPEC_LP64</td>
</tr>
<tr>
<td>505.mcf_r</td>
<td>-DSPEC_LP64</td>
</tr>
<tr>
<td>520.omnetpp_r</td>
<td>-DSPEC_LP64</td>
</tr>
<tr>
<td>523.xalancbmk_r</td>
<td>-DSPEC_LINUX -DSPEC_LP64</td>
</tr>
<tr>
<td>525.x264_r</td>
<td>-DSPEC_LP64</td>
</tr>
<tr>
<td>531.deepsjeng_r</td>
<td>-DSPEC_LP64</td>
</tr>
<tr>
<td>541.leela_r</td>
<td>-DSPEC_LP64</td>
</tr>
<tr>
<td>548.exchange2_r</td>
<td>-DSPEC_LP64</td>
</tr>
<tr>
<td>557.xz_r</td>
<td>-DSPEC_LP64</td>
</tr>
</tbody>
</table>

### Base Optimization Flags

#### C benchmarks:
- -m64 -Wl,-allow-multiple-definition -Wl,-mlivm -Wl,-enable-licm-vrp  
- -flto -Wl,-mlivm -Wl,-region-vectorize  
- -Wl,-mlivm -Wl,-function-specialize  
- -Wl,-mlivm -Wl,-align-all-nofallthru-blocks=6  
- -Wl,-mlivm -Wl,-reduce-array-computations=3 -O3 -ffast-math  
- -march=xnver3 -fveclib=AMDLIBM -fstruct-layout=5  
- -mlivm -unroll-threshold=50 -mlivm -inline-threshold=1000  
- -fremap-arrays -mlivm -function-specialize -flv-function-specialization  
- -mlivm -enable-gvn-hoist -mlivm -global-vectorize-slp=true  
- -mlivm -enable-licm-vrp -mlivm -reduce-array-computations=3 -z muldefs  
- -landlibm -ljemalloc -lflang -lflangrti  

#### C++ benchmarks:
- -m64 -std=c++98 -Wl,-mlivm -Wl,-do-block-reorder=aggressive -flto  
- -Wl,-mlivm -Wl,-region-vectorize -Wl,-mlivm -Wl,-function-specialize  
- -Wl,-mlivm -Wl,-align-all-nofallthru-blocks=6  
- -Wl,-mlivm -Wl,-reduce-array-computations=3 -O3 -ffast-math

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Base Optimization Flags (Continued)

C++ benchmarks (continued):

Fortran benchmarks:

Base Other Flags

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

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

Peak Compiler Invocation

C benchmarks:
clang

C++ benchmarks:
clang++

Fortran benchmarks:
flang
Cisco Systems
Cisco UCS C225 M6 (AMD EPYC 75F3 32-Core Processor)

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CPU2017 License: 9019
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Hardware Availability: Jun-2021
Software Availability: Jun-2021

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

502.gcc_r: -m32 -Wl,-allow-multiple-definition
-Wl,-mlllvm -Wl,-enable-licm-vrp -flto
-Wl,-mlllvm -Wl,-function-specialize -Ofast -march=znver3
-fveclib=AMDLIBM -fstruct-layout=7
-mlllvm -unroll-threshold=50 -fremap-arrays
-flv-function-specialization -mlllvm -inline-threshold=1000
-mlllvm -enable-gvn-hoist -mlllvm -global-vectorize-slp=true
-mlllvm -function-specialize -mlllvm -enable-licm-vrp
-mlllvm -reduce-array-computations=3 -fgnu89-inline
-ljemalloc

505.mcf_r: -m64 -Wl,-allow-multiple-definition
-Wl,-mlllvm -Wl,-enable-licm-vrp -flto
-Wl,-mlllvm -Wl,-function-specialize
-Wl,-mlllvm -Wl,-align-all-nofallthru-blocks=6

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### Peak Optimization Flags (Continued)

505.mcf_r (continued):
- `W1`, `-mlvm -W1, -reduce-array-computations=3 -0fast`
- `-march=znver3 -fveclib=AMDLIBM -fstruct-layout=7`
- `-mlvm -unroll-threshold=50 -fremap-arrays`
- `-flv-function-specialization -mlvm -inline-threshold=1000`
- `-mlvm -enable-gvn-hoist -mlvm -global-vectorize-slp=true`
- `-mlvm -function-specialize -mlvm -enable-licm-vrp`
- `-mlvm -reduce-array-computations=3 -lamdlibm -ljemalloc`

525.x264_r: basepeak = yes
557.xz_r: basepeak = yes

C++ benchmarks:

520.omnetpp_r: basepeak = yes

523.xalancbmk_r: `-m32 -W1, -mlvm -W1, -do-block-reorder=aggressive -flto`
- `-W1, -mlvm -W1, -function-specialize`
- `-W1, -mlvm -W1, -align-all-nofallthru-blocks=6`
- `-W1, -mlvm -W1, -reduce-array-computations=3 -0fast`
- `-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 -ljemalloc`

531.deepsjeng_r: basepeak = yes

541.leela_r: `-m64 -std=c++98`
- `-W1, -mlvm -W1, -do-block-reorder=aggressive -flto`
- `-W1, -mlvm -W1, -function-specialize`
- `-W1, -mlvm -W1, -align-all-nofallthru-blocks=6`
- `-W1, -mlvm -W1, -reduce-array-computations=3 -0fast`
- `-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`

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Peak Optimization Flags (Continued)

541.leela_r (continued):
- 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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