



SPEC CPU®2017 Integer Rate Result

Copyright 2017-2021 Standard Performance Evaluation Corporation

Cisco Systems

SPECrate®2017_int_base = 467

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

SPECrate®2017_int_peak = 479

CPU2017 License: 9019

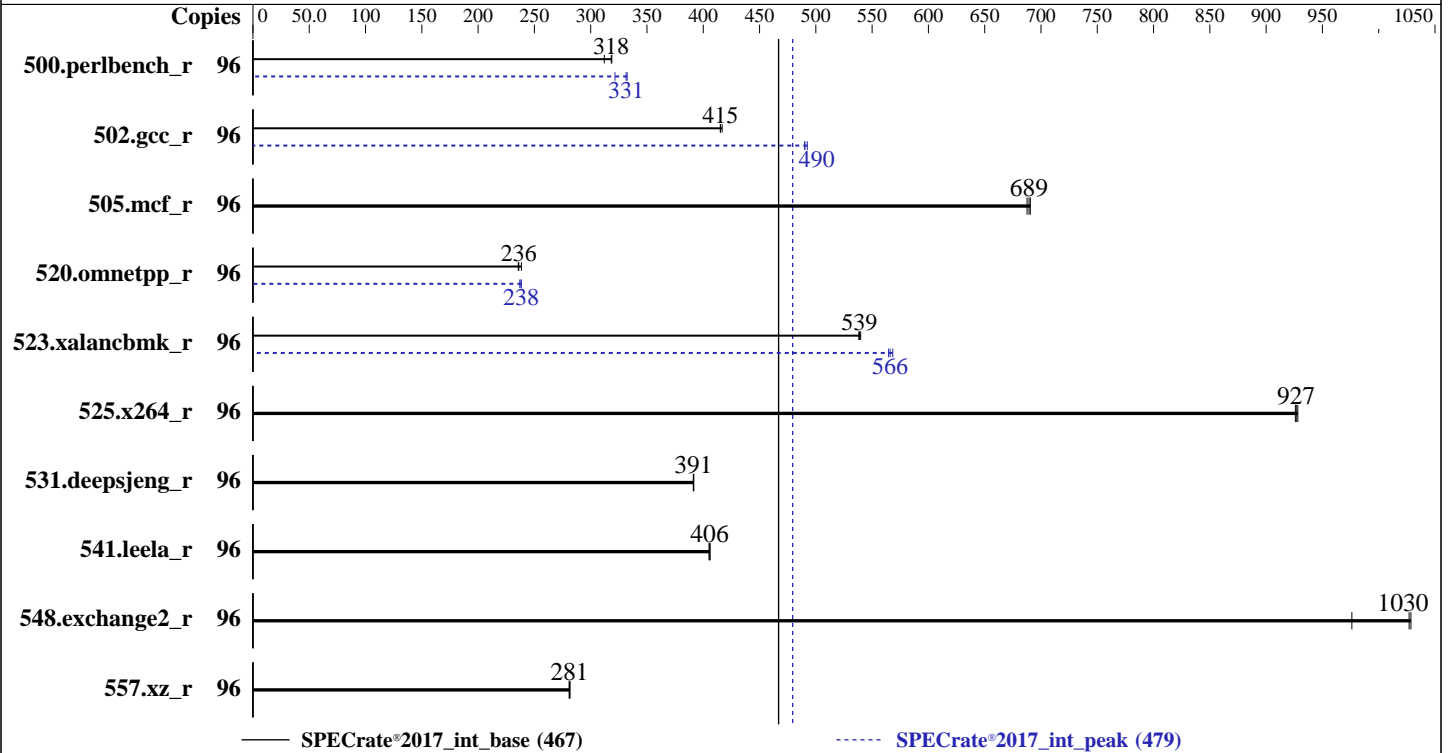
Test Date: Nov-2021

Test Sponsor: Cisco Systems

Hardware Availability: Jun-2021

Tested by: Cisco Systems

Software Availability: Jun-2021



Hardware

CPU Name: AMD EPYC 74F3
 Max MHz: 4000
 Nominal: 3200
 Enabled: 48 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 / 3 cores
 Other: None
 Memory: 2 TB (16 x 128 GB 4Rx4 PC4-3200AA-L)
 Storage: 1 x 1.9 TB SSD SATA
 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 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
 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

Benchmark	Base							Peak						
	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
500.perlbench_r	96	479	319	490	312	480	318	96	460	332	475	322	461	331
502.gcc_r	96	326	417	327	415	327	415	96	276	492	277	490	277	490
505.mcf_r	96	226	688	225	691	225	689	96	226	688	225	691	225	689
520.omnetpp_r	96	533	236	528	238	534	236	96	529	238	531	237	528	238
523.xalancbmk_r	96	188	539	188	540	188	538	96	179	566	178	568	180	565
525.x264_r	96	181	927	182	926	181	928	96	181	927	182	926	181	928
531.deepsjeng_r	96	281	392	281	391	281	391	96	281	392	281	391	281	391
541.leela_r	96	392	406	392	405	391	406	96	392	406	392	405	391	406
548.exchange2_r	96	258	976	245	1030	245	1030	96	258	976	245	1030	245	1030
557.xz_r	96	368	282	369	281	369	281	96	368	282	369	281	369	281

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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 numactl 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.
'sync; 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/enabled' and
'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_a  
    occ300_milan_B_lib/lib32:"  
MALLOCCONF = "retain:true"
```

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

```
MALLOCCONF = "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

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Platform Notes (Continued)

running on localhost Wed Oct 27 05:34:13 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

2 "physical id"s (chips)

96 "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

physical 1: 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): 96

On-line CPU(s) list: 0-95

Thread(s) per core: 2

Core(s) per socket: 24

Socket(s): 2

NUMA node(s): 16

Vendor ID: AuthenticAMD

CPU family: 25

Model: 1

Model name: AMD EPYC 74F3 24-Core Processor

Stepping: 1

Frequency boost: enabled

CPU MHz: 1705.695

CPU max MHz: 3200.0000

CPU min MHz: 1500.0000

BogoMIPS: 6388.39

Virtualization: AMD-V

L1d cache: 1.5 MiB

L1i cache: 1.5 MiB

L2 cache: 24 MiB

L3 cache: 512 MiB

NUMA node0 CPU(s): 0-2,48-50

NUMA node1 CPU(s): 3-5,51-53

NUMA node2 CPU(s): 6-8,54-56

NUMA node3 CPU(s): 9-11,57-59

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Platform Notes (Continued)

```

NUMA node4 CPU(s):          12-14,60-62
NUMA node5 CPU(s):          15-17,63-65
NUMA node6 CPU(s):          18-20,66-68
NUMA node7 CPU(s):          21-23,69-71
NUMA node8 CPU(s):          24-26,72-74
NUMA node9 CPU(s):          27-29,75-77
NUMA node10 CPU(s):         30-32,78-80
NUMA node11 CPU(s):         33-35,81-83
NUMA node12 CPU(s):         36-38,84-86
NUMA node13 CPU(s):         39-41,87-89
NUMA node14 CPU(s):         42-44,90-92
NUMA node15 CPU(s):         45-47,93-95
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 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 noopl nonstop_tsc cpuid extd_apicid aperfmperf pni pclmulqdq monitor ssse3 fma cx16 pcid sse4_1 sse4_2 movbe popcnt aes xsave avx f16c rdrand lahf_lm cmp_legacy svm extapic cr8_legacy abm sse4a misalignsse 3dnowprefetch osvw ibs skinit wdt tce topoext perfctr_core perfctr_nb bpext perfctr_llc mwaitx cpb cat_l3 cdp_l3 invpcid_single hw_pstate ssbd mba ibrs ibpb stibp vmmcall fsgsbase bmi1 avx2 smep bmi2 invpcid cqm rdt_a rdseed adx smap clflushopt clwb sha_ni xsaveopt xsavec xgetbv1 xsaves cqm_llc cqm_occup_llc cqm_mbm_total cqm_mbm_local clzero irperf xsaveprtr wbnoinvd amd_ppin arat npt lbrv 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	1.5M	8	Data	1	64	1	64
L1i	32K	1.5M	8	Instruction	1	64	1	64
L2	512K	24M	8	Unified	2	1024	1	64
L3	32M	512M	16	Unified	3	32768	1	64

```

/proc/cpuinfo cache data
cache size : 512 KB

```

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Platform Notes (Continued)

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 48 49 50
node 0 size: 128838 MB
node 0 free: 128691 MB
node 1 cpus: 3 4 5 51 52 53
node 1 size: 129020 MB
node 1 free: 128914 MB
node 2 cpus: 6 7 8 54 55 56
node 2 size: 129022 MB
node 2 free: 128905 MB
node 3 cpus: 9 10 11 57 58 59
node 3 size: 129020 MB
node 3 free: 128912 MB
node 4 cpus: 12 13 14 60 61 62
node 4 size: 129022 MB
node 4 free: 128848 MB
node 5 cpus: 15 16 17 63 64 65
node 5 size: 129020 MB
node 5 free: 128911 MB
node 6 cpus: 18 19 20 66 67 68
node 6 size: 129022 MB
node 6 free: 128901 MB
node 7 cpus: 21 22 23 69 70 71
node 7 size: 129008 MB
node 7 free: 128898 MB
node 8 cpus: 24 25 26 72 73 74
node 8 size: 129022 MB
node 8 free: 128914 MB
node 9 cpus: 27 28 29 75 76 77
node 9 size: 129020 MB
node 9 free: 128894 MB
node 10 cpus: 30 31 32 78 79 80
node 10 size: 128988 MB
node 10 free: 128881 MB
node 11 cpus: 33 34 35 81 82 83
node 11 size: 129020 MB
node 11 free: 128904 MB
node 12 cpus: 36 37 38 84 85 86
node 12 size: 129022 MB
node 12 free: 128680 MB
node 13 cpus: 39 40 41 87 88 89
node 13 size: 129020 MB
node 13 free: 128906 MB
node 14 cpus: 42 43 44 90 91 92

```

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Platform Notes (Continued)

```

node 14 size: 129022 MB
node 14 free: 128694 MB
node 15 cpus: 45 46 47 93 94 95
node 15 size: 129019 MB
node 15 free: 128899 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 12 32 32 32 32 32 32 32
 1:  11 10 12 12 12 12 12 12 12 32 32 32 32 32 32 32
 2:  12 12 10 11 12 12 12 12 12 32 32 32 32 32 32 32
 3:  12 12 11 10 12 12 12 12 12 32 32 32 32 32 32 32
 4:  12 12 12 12 10 11 12 12 12 32 32 32 32 32 32 32
 5:  12 12 12 12 11 10 12 12 12 32 32 32 32 32 32 32
 6:  12 12 12 12 12 12 10 11 12 32 32 32 32 32 32 32
 7:  12 12 12 12 12 12 11 10 12 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 11 10 12 12 12 12 12 12
10:  32 32 32 32 32 32 32 32 12 12 10 11 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 10 11 12 12 12
13:  32 32 32 32 32 32 32 32 12 12 12 11 10 12 12 12
14:  32 32 32 32 32 32 32 32 12 12 12 12 12 10 11 12
15:  32 32 32 32 32 32 32 32 12 12 12 12 12 11 10 12

```

```

From /proc/meminfo
MemTotal:      2113647740 kB
HugePages_Total:      0
Hugepagesize:    2048 kB

```

```

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

```

```

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 x86_64 GNU/Linux

```

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Platform Notes (Continued)

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, 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 Oct 27 05:29

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)

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)
Target: i386-unknown-linux-gnu
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=====
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++ | 523.xalanbmk_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)

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



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Base Compiler Invocation

C benchmarks:

clang

C++ benchmarks:

clang++

Fortran benchmarks:

flang

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.leela_r: -DSPEC_LP64
548.exchange2_r: -DSPEC_LP64
557.xz_r: -DSPEC_LP64
```

Base Optimization Flags

C benchmarks:

```
-m64 -Wl,-allow-multiple-definition -Wl,-mllvm -Wl,-enable-licm-vrp
-flto -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 -ffast-math
-march=znver3 -fveclib=AMDLIBM -fstruct-layout=5
-mllvm -unroll-threshold=50 -mllvm -inline-threshold=1000
-fremap-arrays -mllvm -function-specialize -flv-function-specialization
-mllvm -enable-gvn-hoist -mllvm -global-vectorize-slp=true
-mllvm -enable-licm-vrp -mllvm -reduce-array-computations=3 -z muldefs
-lamdlibm -ljemalloc -lflang -lflangrti
```

C++ benchmarks:

```
-m64 -std=c++98 -Wl,-mllvm -Wl,-do-block-reorder=aggressive -flto
-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 -ffast-math
```

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SPEC CPU®2017 Integer Rate Result

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Cisco Systems

SPECrate®2017_int_base = 467

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

SPECrate®2017_int_peak = 479

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 -mllvm -enable-partial-unswitch
-mllvm -unroll-threshold=100 -finline-aggressive
-flv-function-specialization -mllvm -loop-unswitch-threshold=200000
-mllvm -reroll-loops -mllvm -aggressive-loop-unswitch
-mllvm -extra-vectorizer-passes -mllvm -reduce-array-computations=3
-mllvm -global-vectorize-slp=true -mllvm -convert-pow-exp-to-int=false
-z muldefs -mllvm -do-block-reorder=aggressive
-fvirtual-function-elimination -fvisibility=hidden -lamdlibm
-ljemalloc -lflang -lflangrti
```

Fortran benchmarks:

```
-m64 -Wl,-mllvm -Wl,-inline-recursion=4
-Wl,-mllvm -Wl,-lsr-in-nested-loop -Wl,-mllvm -Wl,-enable-iv-split
-flto -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 -ffast-math
-march=znver3 -fveclib=AMDLIBM -z muldefs -mllvm -unroll-aggressive
-mllvm -unroll-threshold=500 -lamdlibm -ljemalloc -lflang -lflangrti
```

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



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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,-mllvm -Wl,-enable-licm-vrp -flto
-Wl,-mllvm -Wl,-function-specialize
-Wl,-mllvm -Wl,-align-all-nofallthru-blocks=6
-Wl,-mllvm -Wl,-reduce-array-computations=3
-fprofile-instr-generate(pass 1)
-fprofile-instr-use(pass 2) -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=false
-mllvm -function-specialize -mllvm -enable-licm-vrp
-mllvm -reduce-array-computations=3 -lamdlibm -ljemalloc

502.gcc_r: -m32 -Wl,-allow-multiple-definition
-Wl,-mllvm -Wl,-enable-licm-vrp -flto
-Wl,-mllvm -Wl,-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-licm-vrp
-mllvm -reduce-array-computations=3 -fgnu89-inline
-ljemalloc

505.mcf_r: basepeak = yes

525.x264_r: basepeak = yes
```

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Test Sponsor: Cisco Systems

Hardware Availability: Jun-2021

Tested by: Cisco Systems

Software Availability: Jun-2021

Peak Optimization Flags (Continued)

557.xz_r: basepeak = yes

C++ benchmarks:

```
520.omnetpp_r: -m64 -std=c++98
-Wl,-mllvm -Wl,-do-block-reorder=aggressive -flto
-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 -finline-aggressive
-mllvm -unroll-threshold=100 -flv-function-specialization
-mllvm -enable-licm-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
-lamdlibm -ljemalloc
```

```
523.xalancbmk_r: -m32 -Wl,-mllvm -Wl,-do-block-reorder=aggressive -flto
-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 -finline-aggressive
-mllvm -unroll-threshold=100 -flv-function-specialization
-mllvm -enable-licm-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

541.leela_r: basepeak = yes

Fortran benchmarks:

548.exchange2_r: basepeak = yes



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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

<http://www.spec.org/cpu2017/flags/aocc300-flags-B2.html>

<http://www.spec.org/cpu2017/flags/Cisco-Platform-Settings-AMD-v2-revD.html>

You can also download the XML flags sources by saving the following links:

<http://www.spec.org/cpu2017/flags/aocc300-flags-B2.xml>

<http://www.spec.org/cpu2017/flags/Cisco-Platform-Settings-AMD-v2-revD.xml>

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