



# SPEC CPU®2017 Integer Rate Result

Copyright 2017-2024 Standard Performance Evaluation Corporation

## Cisco Systems

Cisco UCS X215c M8 (AMD EPYC 9845  
2.10 GHz Processor)

SPECrate®2017\_int\_base = 2520

SPECrate®2017\_int\_peak = Not Run

CPU2017 License: 9019

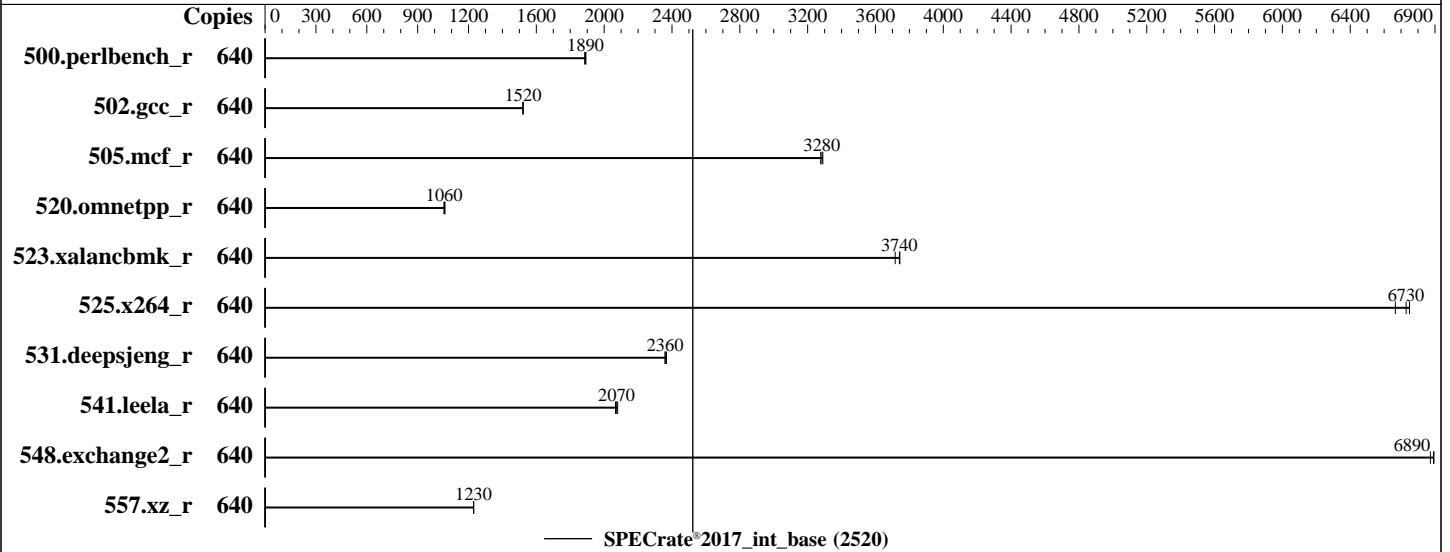
Test Sponsor: Cisco Systems

Tested by: Cisco Systems

Test Date: Nov-2024

Hardware Availability: Oct-2024

Software Availability: Sep-2024



### Hardware

CPU Name: AMD EPYC 9845  
 Max MHz: 3700  
 Nominal: 2100  
 Enabled: 320 cores, 2 chips, 2 threads/core  
 Orderable: 1,2 chips  
 Cache L1: 32 KB I + 48 KB D on chip per core  
 L2: 1 MB I+D on chip per core  
 L3: 320 MB I+D on chip per chip, 32 MB shared / 16 cores  
 Other: None  
 Memory: 1536 GB (24 x 64 GB 2Rx4 PC5-6400B-R, running at 6000)  
 Storage: 1 x 960 GB NVMe SSD  
 Other: CPU Cooling: Air

### Software

OS: SUSE Linux Enterprise Server 15 SP5  
 kernel version 5.14.21-150500.53-default  
 Compiler: C/C++/Fortran: Version 5.0.0 of AOCC  
 Parallel: No  
 Firmware: Version 4.3.6.98 released Oct-2024  
 File System: btrfs  
 System State: Run level 3 (multi-user)  
 Base Pointers: 64-bit  
 Peak Pointers: Not Applicable  
 Other: None  
 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 | 640    | 541        | 1880        | 539     | 1890  | <b>539</b> | <b>1890</b> |        |         |       |         |       |         |       |
| 502.gcc_r       | 640    | <b>595</b> | <b>1520</b> | 595     | 1520  | 596        | 1520        |        |         |       |         |       |         |       |
| 505.mcf_r       | 640    | <b>315</b> | <b>3280</b> | 314     | 3290  | 316        | 3280        |        |         |       |         |       |         |       |
| 520.omnetpp_r   | 640    | <b>794</b> | <b>1060</b> | 791     | 1060  | 796        | 1060        |        |         |       |         |       |         |       |
| 523.xalancbmk_r | 640    | 181        | 3740        | 182     | 3720  | <b>181</b> | <b>3740</b> |        |         |       |         |       |         |       |
| 525.x264_r      | 640    | 168        | 6670        | 166     | 6750  | <b>167</b> | <b>6730</b> |        |         |       |         |       |         |       |
| 531.deepsjeng_r | 640    | 311        | 2360        | 310     | 2370  | <b>311</b> | <b>2360</b> |        |         |       |         |       |         |       |
| 541.leela_r     | 640    | <b>511</b> | <b>2070</b> | 510     | 2080  | 513        | 2070        |        |         |       |         |       |         |       |
| 548.exchange2_r | 640    | <b>243</b> | <b>6890</b> | 244     | 6870  | 243        | 6890        |        |         |       |         |       |         |       |
| 557.xz_r        | 640    | 562        | 1230        | 562     | 1230  | <b>562</b> | <b>1230</b> |        |         |       |         |       |         |       |

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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>

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) 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.



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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_aocc500_znver5_A_lib/lib:/home/cpu2017/amd_rate_aocc500_znver5_A_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 set to NPS2  
Determinism Slider set to Power  
DF C-States set to Disabled

```
Sysinfo program /home/cpu2017/bin/sysinfo
Rev: r6732 of 2022-11-07 fe91c89b7ed5c36ae2c92cc097bec197
running on localhost Fri Nov 1 13:46:08 2024
```

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

-----  
Table of contents  
-----

1. uname -a
  2. w
  3. Username
  4. ulimit -a
  5. sysinfo process ancestry
  6. /proc/cpuinfo
  7. lscpu
  8. numactl --hardware
  9. /proc/meminfo
  10. who -r
  11. Systemd service manager version: systemd 249 (249.16+suse.171.gdad0071f15)
  12. Services, from systemctl list-unit-files
  13. Linux kernel boot-time arguments, from /proc/cmdline
  14. cpupower frequency-info
  15. sysctl
  16. /sys/kernel/mm/transparent\_hugepage
  17. /sys/kernel/mm/transparent\_hugepage/khugepaged
  18. OS release
  19. Disk information
  20. /sys/devices/virtual/dmi/id
  21. dmidecode
  22. BIOS
- 

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## Platform Notes (Continued)

```

-----
1. uname -a
Linux localhost 5.14.21-150500.53-default #1 SMP PREEMPT_DYNAMIC Wed May 10 07:56:26 UTC 2023 (b630043)
x86_64 x86_64 x86_64 GNU/Linux

-----
2. w
13:46:08 up 52 min, 1 user, load average: 0.47, 0.13, 0.04
USER      TTY      FROM          LOGIN@   IDLE   JCPU   PCPU WHAT
root      tty1    -             13:45   48.00s 1.14s  0.13s /bin/bash ./amd_rate_aocc500_znver5_A1.sh

-----
3. Username
From environment variable $USER: root

-----
4. ulimit -a
core file size          (blocks, -c) unlimited
data seg size           (kbytes, -d) unlimited
scheduling priority     (-e) 0
file size                (blocks, -f) unlimited
pending signals         (-i) 6189656
max locked memory       (kbytes, -l) 2097152
max memory size         (kbytes, -m) unlimited
open files              (-n) 1024
pipe size                (512 bytes, -p) 8
POSIX message queues    (bytes, -q) 819200
real-time priority      (-r) 0
stack size              (kbytes, -s) unlimited
cpu time                (seconds, -t) unlimited
max user processes     (-u) 6189656
virtual memory          (kbytes, -v) unlimited
file locks              (-x) unlimited

-----
5. sysinfo process ancestry
/usr/lib/systemd/systemd --switched-root --system --deserialize 34
login -- root
-bash
python3 ./run_amd_rate_aocc500_znver5_A1.py -b intrate
/bin/bash ./amd_rate_aocc500_znver5_A1.sh
runcpu --config amd_rate_aocc500_znver5_A1.cfg --tune base --reportable --iterations 3 intrate
runcpu --configfile amd_rate_aocc500_znver5_A1.cfg --tune base --reportable --iterations 3 --nopower
--runmode rate --tune base --size test:train:refrate intrate --nopreenv --note-preenv --logfile
$SPEC/tmp/CPU2017.001/templogs/preenv.intrate.001.0.log --lognum 001.0 --from_runcpu 2
specperl $SPEC/bin/sysinfo
$SPEC = /home/cpu2017

-----
6. /proc/cpuinfo
model name      : AMD EPYC 9845 160-Core Processor
vendor_id      : AuthenticAMD
cpu family     : 26
model          : 17
stepping       : 0
microcode      : 0xb101021
bugs           : sysret_ss_attrs spectre_v1 spectre_v2 spec_store_bypass
TLB size      : 192 4K pages
cpu cores     : 160

```

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### Platform Notes (Continued)

```
siblings          : 320
2 physical ids (chips)
640 processors (hardware threads)
physical id 0: core ids 0-159
physical id 1: core ids 0-159
physical id 0: apicids 0-319
physical id 1: apicids 512-831
```

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

#### 7. lscpu

From lscpu from util-linux 2.37.4:

```
Architecture:          x86_64
CPU op-mode(s):        32-bit, 64-bit
Address sizes:         52 bits physical, 57 bits virtual
Byte Order:            Little Endian
CPU(s):                640
On-line CPU(s) list:   0-639
Vendor ID:             AuthenticAMD
Model name:            AMD EPYC 9845 160-Core Processor
CPU family:            26
Model:                 17
Thread(s) per core:    2
Core(s) per socket:    160
Socket(s):              2
Stepping:              0
Frequency boost:       enabled
CPU max MHz:           3718.0659
CPU min MHz:           1500.0000
BogoMIPS:              4193.77
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 amd_lbr_v2 nopl nonstop_tsc cpuid extd_apicid
                        aperfmperf rapl pni pclmulqdq monitor sse3 fma cx16 pcid sse4_1 sse4_2
                        x2apic movbe popcnt aes xsave avx fl6c 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 perfmon_v2 ibrs ibpb stibp
                        vmmcall fsgsbase tsc_adjust bmi1 avx2 smep bmi2 erms invpcid cqm rdt_a
                        avx512f avx512dq rdseed adx smap avx512ifma clflushopt clwb avx512cd
                        sha_ni avx512bw avx512vl xsaveopt xsavec xgetbv1 xsavec cqm_llc
                        cqm_occup_llc cqm_mbm_total cqm_mbm_local avx_vnni avx512_bf16 clzero
                        irperf xsaveerptr rdpru wbnoinvd amd_ppin cppc arat npt lbrv svm_lock
                        nrip_save tsc_scale vmcb_clean flushbyasid decodeassists pausefilter
                        pfthreshold avic v_vmsave_vmload vgif v_spec_ctrl avx512vbmi umip pku
                        ospke avx512_vbmi2 gfni vaes vpclmulqdq avx512_vnni avx512_bitalg
                        avx512_vpopcntdq la57 rdpid bus_lock_detect movdiri movdir64b
                        overflow_recov succor smca fsrm avx512_vp2intersect flush_lld
Virtualization:        AMD-V
L1d cache:             15 MiB (320 instances)
L1i cache:             10 MiB (320 instances)
L2 cache:              320 MiB (320 instances)
L3 cache:              640 MiB (20 instances)
NUMA node(s):         4
NUMA node0 CPU(s):    0-79,320-399
NUMA node1 CPU(s):    80-159,400-479
NUMA node2 CPU(s):    160-239,480-559
NUMA node3 CPU(s):    240-319,560-639
```

(Continued on next page)



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### Platform Notes (Continued)

Vulnerability Itlb multihit: Not affected  
 Vulnerability Lltf: Not affected  
 Vulnerability Mds: Not affected  
 Vulnerability Meltdown: Not affected  
 Vulnerability Mmio stale data: Not affected  
 Vulnerability Retbleed: Not affected  
 Vulnerability Spec store bypass: Mitigation; Speculative Store Bypass disabled via prctl and seccomp  
 Vulnerability Spectre v1: Mitigation; usercopy/swaps barriers and \_\_user pointer sanitization  
 Vulnerability Spectre v2: Mitigation; Retpolines, IBPB conditional, IBRS\_FW, STIBP always-on, RSB filling, PBRSE-eIBRS Not affected  
 Vulnerability Srbds: Not affected  
 Vulnerability Tsx async abort: Not affected

From lscpu --cache:

| NAME | ONE-SIZE | ALL-SIZE | WAYS | TYPE        | LEVEL | SETS  | PHY-LINE | COHERENCY-SIZE |
|------|----------|----------|------|-------------|-------|-------|----------|----------------|
| L1d  | 48K      | 15M      | 12   | Data        | 1     | 64    | 1        | 64             |
| L1i  | 32K      | 10M      | 8    | Instruction | 1     | 64    | 1        | 64             |
| L2   | 1M       | 320M     | 16   | Unified     | 2     | 1024  | 1        | 64             |
| L3   | 32M      | 640M     | 16   | Unified     | 3     | 32768 | 1        | 64             |

8. numactl --hardware

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

available: 4 nodes (0-3)  
 node 0 cpus: 0-79,320-399  
 node 0 size: 386614 MB  
 node 0 free: 385348 MB  
 node 1 cpus: 80-159,400-479  
 node 1 size: 387032 MB  
 node 1 free: 385907 MB  
 node 2 cpus: 160-239,480-559  
 node 2 size: 386997 MB  
 node 2 free: 386358 MB  
 node 3 cpus: 240-319,560-639  
 node 3 size: 386799 MB  
 node 3 free: 386174 MB  
 node distances:  
 node 0 1 2 3  
 0: 10 12 32 32  
 1: 12 10 32 32  
 2: 32 32 10 12  
 3: 32 32 12 10

9. /proc/meminfo

MemTotal: 1584582604 kB

10. who -r

run-level 3 Nov 1 12:54

11. Systemd service manager version: systemd 249 (249.16+suse.171.gdad0071f15)

| Default    | Target  | Status |
|------------|---------|--------|
| multi-user | running |        |

12. Services, from systemctl list-unit-files

| STATE   | UNIT FILES  |
|---------|---|
| enabled | YaST2-Firstboot YaST2-Second-Stage apparmor auditd cron display-manager getty@ irqbalance |

(Continued on next page)



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### Platform Notes (Continued)

```

iscsi issue-generator kbdsettings klog libvirtfd lvm2-monitor nscd nvmefc-boot-connections
postfix purge-kernels rollback rsyslog smartd sshd systemd-pstore wicked wickedd-auto4
wickedd-dhcp4 wickedd-dhcp6 wickedd-nanny
enabled-runtime      systemd-remount-fs
disabled             autofs autoyast-initscripts blk-availability boot-sysctl ca-certificates chrony-wait
                    chronyd console-getty cups cups-browsed debug-shell dnsmasq ebttables exchange-bmc-os-info
                    firewallld gpm grub2-once haveged haveged-switch-root hv_fcopy_daemon hv_kv_daemon
                    hv_vss_daemon hwloc-dump-hwdata ipmi ipmievd iscsi-init iscsid issue-add-ssh-keys
                    kexec-load ksm kvm_stat libvirt-guests lunmask man-db-create multipathd nfs nfs-blkmap
                    nfs-server nfsserver nvmmf-autoconnect rpcbind rpmconfigcheck rsyncd rtkit-daemon
                    serial-getty@ smartd_generate_opts snmpd snmptrapd strongswan strongswan-starter svnservice
                    systemd-boot-check-no-failures systemd-network-generator systemd-nspawn@ systemd-sysext
                    systemd-time-wait-sync systemd-timesyncd tcsd udisks2 virtinterfaced virtnetworkd
                    virtnodeudev virtnwfilterd virtproxyd virtqemu virtsecret virtstoraged vncserver@
indirect             pcsd virtlockd virtlogd wickedd

```

-----  
13. Linux kernel boot-time arguments, from /proc/cmdline

```

BOOT_IMAGE=/boot/vmlinuz-5.14.21-150500.53-default
root=UUID=93d306e7-b570-47a7-a02a-d098533c83ae
splash=silent
mitigations=auto
quiet
security=apparmor

```

-----  
14. cpupower frequency-info

```

analyzing CPU 0:
  current policy: frequency should be within 1.50 GHz and 2.10 GHz.
                  The governor "performance" may decide which speed to use
                  within this range.

boost state support:
  Supported: yes
  Active: yes

```

-----  
15. sysctl

```

kernel.numa_balancing          1
kernel.randomize_va_space      0
vm.compaction_proactiveness    20
vm.dirty_background_bytes      0
vm.dirty_background_ratio      10
vm.dirty_bytes                 0
vm.dirty_expire_centisecs      3000
vm.dirty_ratio                 8
vm.dirty_writeback_centisecs   500
vm.dirtytime_expire_seconds    43200
vm.extfrag_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

```

-----  
16. /sys/kernel/mm/transparent\_hugepage

```

defrag      [always] defer defer+madvise madvise never

```

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## Platform Notes (Continued)

```
enabled [always] madwise never
hpage_pmd_size 2097152
shmem_enabled always within_size advise [never] deny force
```

```
-----
17. /sys/kernel/mm/transparent_hugepage/khugepaged
alloc_sleep_millisecs 60000
defrag 1
max_ptes_none 511
max_ptes_shared 256
max_ptes_swap 64
pages_to_scan 4096
scan_sleep_millisecs 10000
-----
```

```
-----
18. OS release
From /etc/*-release /etc/*-version
os-release SUSE Linux Enterprise Server 15 SP5
-----
```

```
-----
19. Disk information
SPEC is set to: /home/cpu2017
Filesystem Type Size Used Avail Use% Mounted on
/dev/nvme0n1p3 btrfs 477G 12G 464G 3% /home
-----
```

```
-----
20. /sys/devices/virtual/dmi/id
Vendor: Cisco Systems Inc
Product: UCSX-215C-M8
Serial: FCH282172ES
-----
```

```
-----
21. dmidecode
Additional information from dmidecode 3.4 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:
2x 0xCE00 M321R8GA0PB2-CCPEC 64 GB 2 rank 6400, configured at 6000
22x 0xCE00 M321R8GA0PB2-CCPPC 64 GB 2 rank 6400, configured at 6000
-----
```

```
-----
22. BIOS
(This section combines info from /sys/devices and dmidecode.)
BIOS Vendor: Cisco Systems, Inc.
BIOS Version: X215M8.4.3.6.98.1015240749
BIOS Date: 10/15/2024
BIOS Revision: 5.35
-----
```

## Compiler Version Notes

```
-----
C | 500.perlbench_r(base) 502.gcc_r(base) 505.mcf_r(base) 525.x264_r(base) 557.xz_r(base)
-----
```

```
AMD clang version 17.0.6 (CLANG: AOCC_5.0.0-Build#1316 2024_09_09)
Target: x86_64-unknown-linux-gnu
Thread model: posix
InstalledDir: /opt/AMD/aocc/aocc-compiler-rel-5.0.0-4925-1316/bin
-----
```

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## Compiler Version Notes (Continued)

=====  
C++ | 520.omnetpp\_r(base) 523.xalancbmk\_r(base) 531.deepsjeng\_r(base) 541.leela\_r(base)  
=====

AMD clang version 17.0.6 (CLANG: AOCC\_5.0.0-Build#1316 2024\_09\_09)  
Target: x86\_64-unknown-linux-gnu  
Thread model: posix  
InstalledDir: /opt/AMD/aocc/aocc-compiler-rel-5.0.0-4925-1316/bin  
=====

=====  
Fortran | 548.exchange2\_r(base)  
=====

AMD clang version 17.0.6 (CLANG: AOCC\_5.0.0-Build#1316 2024\_09\_09)  
Target: x86\_64-unknown-linux-gnu  
Thread model: posix  
InstalledDir: /opt/AMD/aocc/aocc-compiler-rel-5.0.0-4925-1316/bin  
=====

## 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



# SPEC CPU®2017 Integer Rate Result

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## Cisco Systems

Cisco UCS X215c M8 (AMD EPYC 9845  
2.10 GHz Processor)

SPECrate®2017\_int\_base = 2520

SPECrate®2017\_int\_peak = Not Run

**CPU2017 License:** 9019

**Test Sponsor:** Cisco Systems

**Tested by:** Cisco Systems

**Test Date:** Nov-2024

**Hardware Availability:** Oct-2024

**Software Availability:** Sep-2024

## Base Optimization Flags

C benchmarks:

```
-m64 -Wl,-mllvm -Wl,-align-all-nofallthru-blocks=6
-Wl,-mllvm -Wl,-reduce-array-computations=3
-Wl,-mllvm -Wl,-ldist-scalar-expand -fenable-aggressive-gather
-Wl,-mllvm -Wl,-extra-inliner -z muldefs -O3 -march=znver5
-fveclib=AMDLIBM -ffast-math -fno-PIE -no-pie -flto
-fstruct-layout=7 -mllvm -unroll-threshold=50
-mllvm -inline-threshold=1000 -fremap-arrays -fstrip-mining
-mllvm -reduce-array-computations=3 -zopt -lamdlibm -lflang
-lamdalloc-ext -ldl
```

C++ benchmarks:

```
-m64 -std=c++14 -Wl,-mllvm -Wl,-align-all-nofallthru-blocks=6
-Wl,-mllvm -Wl,-reduce-array-computations=3
-Wl,-mllvm -Wl,-do-block-reorder=advanced -z muldefs -O3 -march=znver5
-fveclib=AMDLIBM -ffast-math -flto -mllvm -unroll-threshold=100
-mllvm -loop-unswitch-threshold=200000
-mllvm -reduce-array-computations=3 -zopt -fno-PIE -no-pie
-fvirtual-function-elimination -fvisibility=hidden
-mllvm -do-block-reorder=advanced -lamdlibm -lflang -lamdalloc-ext
-ldl
```

Fortran benchmarks:

```
-m64 -Wl,-mllvm -Wl,-align-all-nofallthru-blocks=6
-Wl,-mllvm -Wl,-reduce-array-computations=3
-Wl,-mllvm -Wl,-inline-recursion=4 -Wl,-mllvm -Wl,-lsr-in-nested-loop
-Wl,-mllvm -Wl,-enable-iv-split -z muldefs -O3 -march=znver5
-fveclib=AMDLIBM -ffast-math -flto
-fepilog-vectorization-of-inductions -mllvm -optimize-strided-mem-cost
-floop-transform -mllvm -unroll-aggressive -mllvm -unroll-threshold=500
-lamdlibm -lflang -lamdalloc -ldl
```

## Base Other Flags

C benchmarks:

```
-Wno-unused-command-line-argument
```

C++ benchmarks:

```
-Wno-unused-command-line-argument
```

Fortran benchmarks:

```
-Wno-unused-command-line-argument
```



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The flags files that were used to format this result can be browsed at

<http://www.spec.org/cpu2017/flags/aocc500-flags.html>

<http://www.spec.org/cpu2017/flags/Cisco-Platform-Settings-AMD-Turin-v1.0-revA.html>

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

<http://www.spec.org/cpu2017/flags/aocc500-flags.xml>

<http://www.spec.org/cpu2017/flags/Cisco-Platform-Settings-AMD-Turin-v1.0-revA.xml>

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For questions about this result, please contact the tester. For other inquiries, please contact [info@spec.org](mailto:info@spec.org).

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