



# SPEC CPU®2017 Integer Rate Result

Copyright 2017-2025 Standard Performance Evaluation Corporation

Dell Inc.

SPECrate®2017\_int\_base = 579

SPECrate®2017\_int\_peak = 590

PowerEdge R7725 (AMD EPYC 9175F 16-Core Processor)

CPU2017 License: 6573

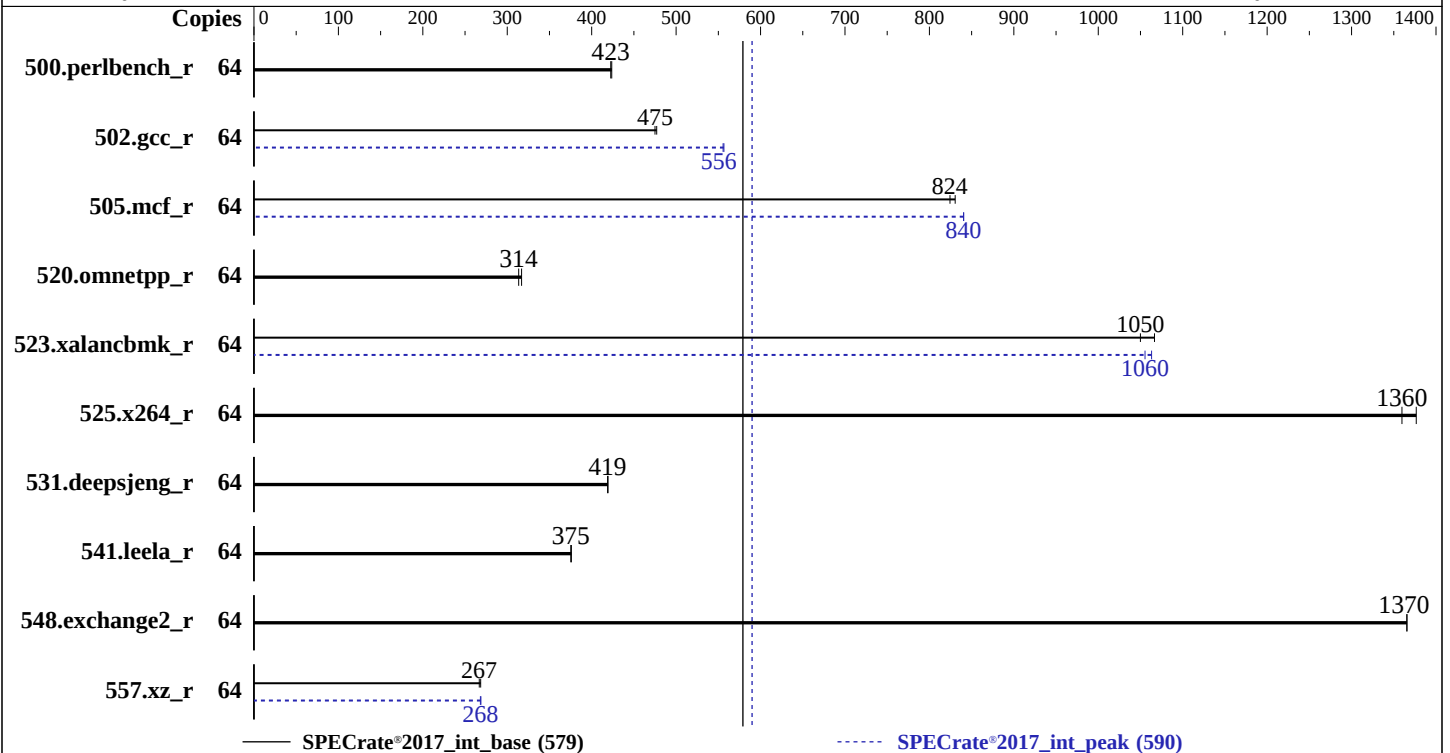
Test Sponsor: Dell Inc.

Tested by: Dell Inc.

Test Date: Jun-2025

Hardware Availability: Apr-2025

Software Availability: Mar-2025



## Hardware

CPU Name: AMD EPYC 9175F  
Max MHz: 5000  
Nominal: 4200  
Enabled: 32 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: 512 MB I+D on chip per chip, 32 MB shared / 1 cores  
Other: None  
Memory: 768 GB (24 x 32 GB 2Rx8 PC5-6400B-R)  
Storage: 60 GB on tmpfs  
Other: CPU Cooling: Air

## Software

OS: Ubuntu 24.04 LTS  
6.8.0-58-generic  
Compiler: C/C++/Fortran: Version 5.0.0 of AOCC  
Parallel: No  
Firmware: Version 1.1.3 released Feb-2025  
File System: tmpfs  
System State: Run level 5 (graphical multi-user)  
Base Pointers: 64-bit  
Peak Pointers: 32/64-bit  
Other: None  
Power Management: BIOS 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 | 64     | 240        | 424         | <u>241</u>  | <u>423</u>  |         |       | 64     | 240        | 424         | <u>241</u>  | <u>423</u>  |         |       |
| 502.gcc_r       | 64     | 190        | 477         | <u>191</u>  | <u>475</u>  |         |       | 64     | <u>163</u> | <u>556</u>  | 163         | 557         |         |       |
| 505.mcf_r       | 64     | 125        | 831         | <u>125</u>  | <u>824</u>  |         |       | 64     | <u>123</u> | <u>840</u>  | 123         | 841         |         |       |
| 520.omnetpp_r   | 64     | <u>268</u> | <u>314</u>  | 265         | 317         |         |       | 64     | <u>268</u> | <u>314</u>  | 265         | 317         |         |       |
| 523.xalancbmk_r | 64     | 63.4       | 1070        | <u>64.4</u> | <u>1050</u> |         |       | 64     | 63.6       | 1060        | <u>64.0</u> | <u>1060</u> |         |       |
| 525.x264_r      | 64     | 81.4       | 1380        | <u>82.4</u> | <u>1360</u> |         |       | 64     | 81.4       | 1380        | <u>82.4</u> | <u>1360</u> |         |       |
| 531.deepsjeng_r | 64     | <u>175</u> | <u>419</u>  | 175         | 419         |         |       | 64     | <u>175</u> | <u>419</u>  | 175         | 419         |         |       |
| 541.leela_r     | 64     | <u>282</u> | <u>375</u>  | 282         | 376         |         |       | 64     | <u>282</u> | <u>375</u>  | 282         | 376         |         |       |
| 548.exchange2_r | 64     | <u>123</u> | <u>1370</u> | 123         | 1370        |         |       | 64     | <u>123</u> | <u>1370</u> | 123         | 1370        |         |       |
| 557.xz_r        | 64     | 257        | 269         | <u>259</u>  | <u>267</u>  |         |       | 64     | 257        | 269         | <u>258</u>  | <u>268</u>  |         |       |

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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) for all allocations,  
'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 =

"/mnt/ramdisk/cpu2017-1.1.9-aocc500-znerv5\_A1.3/amd\_rate\_aocc500\_znver5\_A\_lib/lib:/mnt/ramdisk/cpu2017-1.1.9-aocc500-znerv5\_A1.3/amd\_rate\_aocc500\_znver5\_A\_lib/lib32:"

MALLOC\_CONF = "retain:true"

Environment variables set by runcpu during the 523.xalancbmk\_r peak run:

MALLOC\_CONF = "thp:always"

## General Notes

Binaries were compiled on a system with 2x AMD EPYC 9174F CPU + 1.5TiB Memory using RHEL 8.6

Benchmark run from a 60 GB ramdisk created with the cmd: "mount -t tmpfs -o size=60G tmpfs /mnt/ramdisk"

## Platform Notes

BIOS Settings:

Virtualization Technology : Disabled

NUMA Nodes Per Socket : 4

System Profile : Custom

C-States : Disabled

Memory Patrol Scrub : Disabled

PCI ASPM L1 Link Power Management : Disabled

Periodic Directory Rinse Tuning : Blended

Determinism Control : Manual

Determinism Slider : Power Determinism

Optimizer Mode : Enabled

Adaptive Allocation : Enabled

Dram Refresh Delay : Performance

DIMM Self Healing -

on Uncorrectable Memory Error : Disabled

Sysinfo program /mnt/ramdisk/cpu2017-1.1.9-aocc500-znerv5\_A1.3/bin/sysinfo

Rev: r6732 of 2022-11-07 fe91c89b7ed5c36ae2c92cc097bec197

running on 1234567-R7725 Wed Jun 4 09:14:14 2025

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 255 (255.4-1ubuntu8)
12. Failed units, from systemctl list-units --state=failed
13. Services, from systemctl list-unit-files

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## Platform Notes (Continued)

14. Linux kernel boot-time arguments, from /proc/cmdline  
15. cpupower frequency-info  
16. sysctl  
17. /sys/kernel/mm/transparent\_hugepage  
18. /sys/kernel/mm/transparent\_hugepage/khugepaged  
19. OS release  
20. Disk information  
21. /sys/devices/virtual/dmi/id  
22. dmidecode  
23. BIOS

1. uname -a  
Linux 1234567-R7725 6.8.0-58-generic #60-Ubuntu SMP PREEMPT\_DYNAMIC Fri Mar 14 18:29:48 UTC 2025 x86\_64  
x86\_64 x86\_64 GNU/Linux

2. w  
09:14:14 up 4 min, 1 user, load average: 0.24, 0.07, 0.02  
USER TTY FROM LOGIN@ IDLE JCPU PCPU WHAT  
root tty1 - 09:12 44.00s 1.20s 0.31s /bin/bash ./amd\_rate\_aocc500\_znver5\_A1.sh

3. Username  
From environment variable \$USER: root

4. ulimit -a  
time(seconds) unlimited  
file(blocks) unlimited  
data(kbytes) unlimited  
stack(kbytes) unlimited  
coredump(blocks) 0  
memory(kbytes) unlimited  
locked memory(kbytes) 2097152  
process 3092827  
nofiles 1024  
vmemory(kbytes) unlimited  
locks unlimited  
rtprio 0

5. sysinfo process ancestry  
/sbin/init  
/bin/login -p --  
-bash  
/bin/bash ./DELL\_rate.sh  
/bin/bash /home/DellFiles/bin/dell-run-main.sh rate  
/bin/bash /home/DellFiles/bin/dell-run-main.sh rate  
/bin/bash /home/DellFiles/bin/AMD/dell-run-speccpu.sh rate --define DL-VERS=6.3\_T6 --output\_format  
html,pdf,txt  
python3 ./run\_amd\_rate\_aocc500\_znver5\_A1.py  
/bin/bash ./amd\_rate\_aocc500\_znver5\_A1.sh  
runcpu --config amd\_rate\_aocc500\_znver5\_A1.cfg --tune all --reportable --iterations 2 --define  
DL-VERS=6.3\_T6 --output\_format html,pdf,txt intrate  
runcpu --configfile amd\_rate\_aocc500\_znver5\_A1.cfg --tune all --reportable --iterations 2 --define  
DL-VERS=6.3\_T6 --output\_format html,pdf,txt --nopower --runmode rate --tune base:peak --size  
test:train:refrate intrate --nopreenv --note-preenv --logfile  
\$SPEC/tmp/CPU2017.001/temlogs/preenv.intrate.001.0.log --lognum 001.0 --from\_runcpu 2

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## Platform Notes (Continued)

specperl \$SPEC/bin/sysinfo

\$SPEC = /mnt/ramdisk/cpu2017-1.1.9-aocc500-znerv5\_A1.3

### 6. /proc/cpuinfo

```
model name      : AMD EPYC 9175F 16-Core Processor
vendor_id       : AuthenticAMD
cpu family      : 26
model           : 2
stepping        : 1
microcode       : 0xb00211e
bugs            : sysret_ss_attrs spectre_v1 spectre_v2 spec_store_bypass
TLB size        : 192 4K pages
cpu cores       : 16
siblings        : 32
2 physical ids (chips)
64 processors (hardware threads)
physical id 0:   core ids 0,8,16,24,32,40,48,56,64,72,80,88,96,104,112,120
physical id 1:   core ids 0,8,16,24,32,40,48,56,64,72,80,88,96,104,112,120
physical id 0:   apicids
0-1,16-17,32-33,48-49,64-65,80-81,96-97,112-113,128-129,144-145,160-161,176-177,192-193,208-209,224-225,2
40-241
physical id 1:   apicids
256-257,272-273,288-289,304-305,320-321,336-337,352-353,368-369,384-385,400-401,416-417,432-433,448-449,4
64-465,480-481,496-497
```

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 2.39.3:

```
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):                64
On-line CPU(s) list:   0-63
Vendor ID:             AuthenticAMD
BIOS Vendor ID:        AMD
Model name:            AMD EPYC 9175F 16-Core Processor
BIOS Model name:       AMD EPYC 9175F 16-Core Processor
BIOS CPU family:       107
CPU family:            26
Model:                 2
Thread(s) per core:    2
Core(s) per socket:    16
Socket(s):             2
Stepping:              1
Frequency boost:        enabled
CPU(s) scaling MHz:    38%
CPU max MHz:           5003.9058
CPU min MHz:           1500.0000
BogoMIPS:              8388.44
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 ssse3 fma cx16 pcid
sse4_1 sse4_2 x2apic movbe popcnt aes xsave avx f16c rdrand lahf_lm
cmp_legacy extapic cr8_legacy abm sse4a misalignsse 3dnowprefetch
```

CPU @ 4.2GHz

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## Platform Notes (Continued)

osvw ibs skinit wdt tce topoext perfctr\_core perfctr\_nb bpext  
perfctr\_llc mwaitx cpb cat\_l3 cdp\_l3 hw\_pstate ssbd mba perfmon\_v2  
ibrs ibpb stibp ibrs\_enhanced vmmcall fsgsbase tsc\_adjust bmi1 avx2  
smep bmi2 invpcid cqm rdt\_a avx512f avx512dq rdseed adx smap  
avx512ifma clflushopt clwb avx512cd sha\_ni avx512bw avx512vl xsaveopt  
xsaves xgetbv1 xsaves cqm\_llc cqm\_occup\_llc cqm\_mbm\_total  
cqm\_mbm\_local user\_shstk avx\_vnni avx512\_bf16 clzero irperf  
xsaveerptr rdpru wbnoinvd amd\_ppin cppc amd\_ibpb\_ret arat npt lbrv  
svm\_lock nrp\_save tsc\_scale vmcb\_clean flushbyasid decodeassists  
pausefilter pfthreshold avic v\_vmsave\_vmload vgif x2avic v\_spec\_ctrl  
vnmi 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 avx512\_vp2intersect  
flush\_l1d debug\_swap  
L1d cache: 1.5 MiB (32 instances)  
L1i cache: 1 MiB (32 instances)  
L2 cache: 32 MiB (32 instances)  
L3 cache: 1 GiB (32 instances)  
NUMA node(s): 8  
NUMA node0 CPU(s): 0-3,32-35  
NUMA node1 CPU(s): 4-7,36-39  
NUMA node2 CPU(s): 8-11,40-43  
NUMA node3 CPU(s): 12-15,44-47  
NUMA node4 CPU(s): 16-19,48-51  
NUMA node5 CPU(s): 20-23,52-55  
NUMA node6 CPU(s): 24-27,56-59  
NUMA node7 CPU(s): 28-31,60-63  
Vulnerability Gather data sampling: Not affected  
Vulnerability Itlb multihit: Not affected  
Vulnerability L1tf: Not affected  
Vulnerability Mds: Not affected  
Vulnerability Meltdown: Not affected  
Vulnerability Mmio stale data: Not affected  
Vulnerability Reg file data sampling: Not affected  
Vulnerability Retbleed: Not affected  
Vulnerability Spec rstack overflow: Not affected  
Vulnerability Spec store bypass: Mitigation; Speculative Store Bypass disabled via prctl  
Vulnerability Spectre v1: Mitigation; usercopy/swapgs barriers and \_\_user pointer sanitization  
Vulnerability Spectre v2: Mitigation; Enhanced / Automatic IBRS; IBPB conditional; STIBP  
always-on; RSB filling; PBRSE-eIBRS Not affected; BHI 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      | 1.5M     | 12   | Data        | 1     | 64    | 1        | 64             |
| L1i  | 32K      | 1M       | 8    | Instruction | 1     | 64    | 1        | 64             |
| L2   | 1M       | 32M      | 16   | Unified     | 2     | 1024  | 1        | 64             |
| L3   | 32M      | 1G       | 16   | Unified     | 3     | 32768 | 1        | 64             |

8. numactl --hardware

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

available: 8 nodes (0-7)

node 0 cpus: 0-3,32-35

node 0 size: 96044 MB

node 0 free: 91589 MB

node 1 cpus: 4-7,36-39

node 1 size: 96761 MB

node 1 free: 96545 MB

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## Platform Notes (Continued)

```
node 2 cpus: 8-11,40-43
node 2 size: 96761 MB
node 2 free: 96508 MB
node 3 cpus: 12-15,44-47
node 3 size: 96745 MB
node 3 free: 96545 MB
node 4 cpus: 16-19,48-51
node 4 size: 96761 MB
node 4 free: 96072 MB
node 5 cpus: 20-23,52-55
node 5 size: 96761 MB
node 5 free: 96518 MB
node 6 cpus: 24-27,56-59
node 6 size: 96761 MB
node 6 free: 96564 MB
node 7 cpus: 28-31,60-63
node 7 size: 96686 MB
node 7 free: 96266 MB
node distances:
node  0  1  2  3  4  5  6  7
0: 10 12 12 12 32 32 32 32
1: 12 10 12 12 32 32 32 32
2: 12 12 10 12 32 32 32 32
3: 12 12 12 10 32 32 32 32
4: 32 32 32 32 10 12 12 12
5: 32 32 32 32 12 10 12 12
6: 32 32 32 32 12 12 10 12
7: 32 32 32 32 12 12 12 10
```

```
-----
9. /proc/meminfo
MemTotal:      791840100 kB
```

```
-----
10. who -r
run-level 5 Jun 4 09:12
```

```
-----
11. Systemd service manager version: systemd 255 (255.4-1ubuntu8)
Default Target    Status
graphical         degraded
```

```
-----
12. Failed units, from systemctl list-units --state=failed
UNIT                                LOAD    ACTIVE SUB    DESCRIPTION
* systemd-networkd-wait-online.service loaded failed failed Wait for Network to be Configured
Legend: LOAD    -> Reflects whether the unit definition was properly loaded.
        ACTIVE -> The high-level unit activation state, i.e. generalization of SUB.
        SUB    -> The low-level unit activation state, values depend on unit type.
1 loaded units listed.
```

```
-----
13. Services, from systemctl list-unit-files
STATE UNIT FILES
enabled ModemManager apparmor apport blk-availability cloud-config cloud-final cloud-init
cloud-init-local console-setup cron dmesg e2scrub_reap finalrd getty@ gpu-manager
grub-common grub-initrd-fallback keyboard-setup lm-sensors lvm2-monitor multipathd
networkd-dispatcher open-iscsi open-vm-tools pollinate rsyslog secureboot-db setvtrgb
sysstat systemd-networkd systemd-networkd-wait-online systemd-pstore systemd-resolved
systemd-timesyncd thermald ua-reboot-cmds ubuntu-advantage udisks2 ufw vgauth
```

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## Platform Notes (Continued)

enabled-runtime netplan-ovs-cleanup systemd-fsck-root systemd-remount-fs  
disabled console-getty debug-shell iscsid nftables rsync serial-getty@ ssh  
systemd-boot-check-no-failures systemd-confext systemd-network-generator  
systemd-networkd-wait-online@ systemd-pcrlock-file-system systemd-pcrlock-firmware-code  
systemd-pcrlock-firmware-config systemd-pcrlock-machine-id systemd-pcrlock-make-policy  
systemd-pcrlock-secureboot-authority systemd-pcrlock-secureboot-policy systemd-sysex  
systemd-time-wait-sync upower  
indirect systemd-sysupdate systemd-sysupdate-reboot uuuid  
masked cryptdisks cryptdisks-early hwclock multipath-tools-boot screen-cleanup sudo x11-common

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

BOOT\_IMAGE=/boot/vmlinuz-6.8.0-58-generic  
root=UUID=c330b932-4a2a-48ee-a22b-539a12ed1698  
ro

### 15. cpupower frequency-info

analyzing CPU 49:  
current policy: frequency should be within 1.50 GHz and 4.20 GHz.  
The governor "schedutil" may decide which speed to use  
within this range.  
boost state support:  
Supported: yes  
Active: yes  
Boost States: 0  
Total States: 3  
Pstate-P0: 4200MHz

### 16. 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     |

### 17. /sys/kernel/mm/transparent\_hugepage

defrag [always] defer defer+madvise madvise never  
enabled [always] madvise never  
hpage\_pmd\_size 2097152  
shmem\_enabled always within\_size advise [never] deny force

### 18. /sys/kernel/mm/transparent\_hugepage/khugepaged

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## Platform Notes (Continued)

```
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
```

-----  
19. OS release  
From /etc/\*-release /etc/\*-version  
os-release Ubuntu 24.04 LTS

-----  
20. Disk information  
SPEC is set to: /mnt/ramdisk/cpu2017-1.1.9-aocc500-znerv5\_A1.3  
Filesystem Type Size Used Avail Use% Mounted on  
tmpfs tmpfs 60G 3.3G 57G 6% /mnt/ramdisk

-----  
21. /sys/devices/virtual/dmi/id  
Vendor: Dell Inc.  
Product: PowerEdge R7725  
Product Family: PowerEdge  
Serial: 1234567

-----  
22. dmidecode  
Additional information from dmidecode 3.5 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:  
24x 802C0000802C MTC20F2085S1RC64BD2 32 GB 2 rank 6400

-----  
23. BIOS  
(This section combines info from /sys/devices and dmidecode.)  
BIOS Vendor: Dell Inc.  
BIOS Version: 1.1.3  
BIOS Date: 02/25/2025  
BIOS Revision: 1.1

## Compiler Version Notes

=====

```
C | 502.gcc_r(peak)
```

-----  
AMD clang version 17.0.6 (CLANG: AOCC\_5.0.0-Build#1316 2024\_09\_09)  
Target: i386-unknown-linux-gnu  
Thread model: posix  
InstalledDir: /opt/AMD/aocc/aocc-compiler-rel-5.0.0-4925-1316/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)
```

(Continued on next page)



# SPEC CPU®2017 Integer Rate Result

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Dell Inc.

SPECrate®2017\_int\_base = 579

SPECrate®2017\_int\_peak = 590

PowerEdge R7725 (AMD EPYC 9175F 16-Core Processor)

CPU2017 License: 6573

Test Sponsor: Dell Inc.

Tested by: Dell Inc.

Test Date: Jun-2025

Hardware Availability: Apr-2025

Software Availability: Mar-2025

## Compiler Version Notes (Continued)

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

C | 502.gcc\_r(peak)

AMD clang version 17.0.6 (CLANG: AOCC\_5.0.0-Build#1316 2024\_09\_09)

Target: i386-unknown-linux-gnu

Thread model: posix

InstalledDir: /opt/AMD/aocc/aocc-compiler-rel-5.0.0-4925-1316/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 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

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

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, peak)

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



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## 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,-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=2000000  
-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



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## Base Other Flags

C benchmarks:

-Wno-unused-command-line-argument

C++ benchmarks:

-Wno-unused-command-line-argument

Fortran benchmarks:

-Wno-unused-command-line-argument

## 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: basepeak = yes

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Software Availability: Mar-2025

## Peak Optimization Flags (Continued)

```
502.gcc_r: -m32 -flto -Wl,-mllvm -Wl,-ldist-scalar-expand
-fenable-aggressive-gather -Wl,-mllvm -Wl,-extra-inliner
-z muldefs -Ofast -march=znver5 -fveclib=AMDLIBM
-ffast-math -fstruct-layout=7 -mllvm -unroll-threshold=50
-freemap-arrays -fstrip-mining
-mllvm -inline-threshold=1000
-mllvm -reduce-array-computations=3 -zopt -fgnu89-inline
-lamdalloc
```

```
505.mcf_r: -m64 -Wl,-mllvm -Wl,-align-all-nofallthru-blocks=6
-Wl,-mllvm -Wl,-reduce-array-computations=3
-Wl,-mllvm -Wl,-extra-inliner -Ofast -march=znver5
-fveclib=AMDLIBM -ffast-math -flto -fstruct-layout=7
-mllvm -unroll-threshold=50 -freemap-arrays -fstrip-mining
-mllvm -inline-threshold=1000
-mllvm -reduce-array-computations=3 -zopt -lamdlibm
-lflang -lamdalloc-ext -ldl
```

525.x264\_r: basepeak = yes

```
557.xz_r: -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
-Ofast -march=znver5 -fveclib=AMDLIBM -ffast-math -flto
-fstruct-layout=7 -mllvm -unroll-threshold=50
-freemap-arrays -fstrip-mining
-mllvm -inline-threshold=1000
-mllvm -reduce-array-computations=3 -zopt -lamdlibm
-lflang -lamdalloc-ext -ldl
```

C++ benchmarks:

520.omnetpp\_r: basepeak = yes

```
523.xalancbmk_r: -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 -Ofast
-march=znver5 -fveclib=AMDLIBM -ffast-math -flto
-mllvm -unroll-threshold=100
-mllvm -reduce-array-computations=3 -zopt
-fvirtual-function-elimination -fvisibility=hidden
-mllvm -do-block-reorder=advanced -lamdlibm -lflang
-lamdalloc-ext -ldl
```

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## Peak Optimization Flags (Continued)

531.deepsjeng\_r: basepeak = yes

541.leela\_r: basepeak = yes

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/lib32 -Wno-unused-command-line-argument

-L/home/work/cpu2017/v119/aocc5/1316/amd\_rate\_aocc500\_znver5\_A\_lib/lib32

C++ benchmarks:

-Wno-unused-command-line-argument

Fortran benchmarks:

-Wno-unused-command-line-argument

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

<http://www.spec.org/cpu2017/flags/aocc500-flags.2024-10-10.html>

<http://www.spec.org/cpu2017/flags/Dell-Platform-Flags-PowerEdge-AMD-EPYC-v1.8.html>

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

<http://www.spec.org/cpu2017/flags/aocc500-flags.2024-10-10.xml>

<http://www.spec.org/cpu2017/flags/Dell-Platform-Flags-PowerEdge-AMD-EPYC-v1.8.xml>

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