



# SPEC CPU®2017 Integer Rate Result

Copyright 2017-2025 Standard Performance Evaluation Corporation

Dell Inc.

SPECrate®2017\_int\_base = 2570

PowerEdge R6725 (AMD EPYC 9845 160-Core Processor)

SPECrate®2017\_int\_peak = 2650

CPU2017 License: 6573

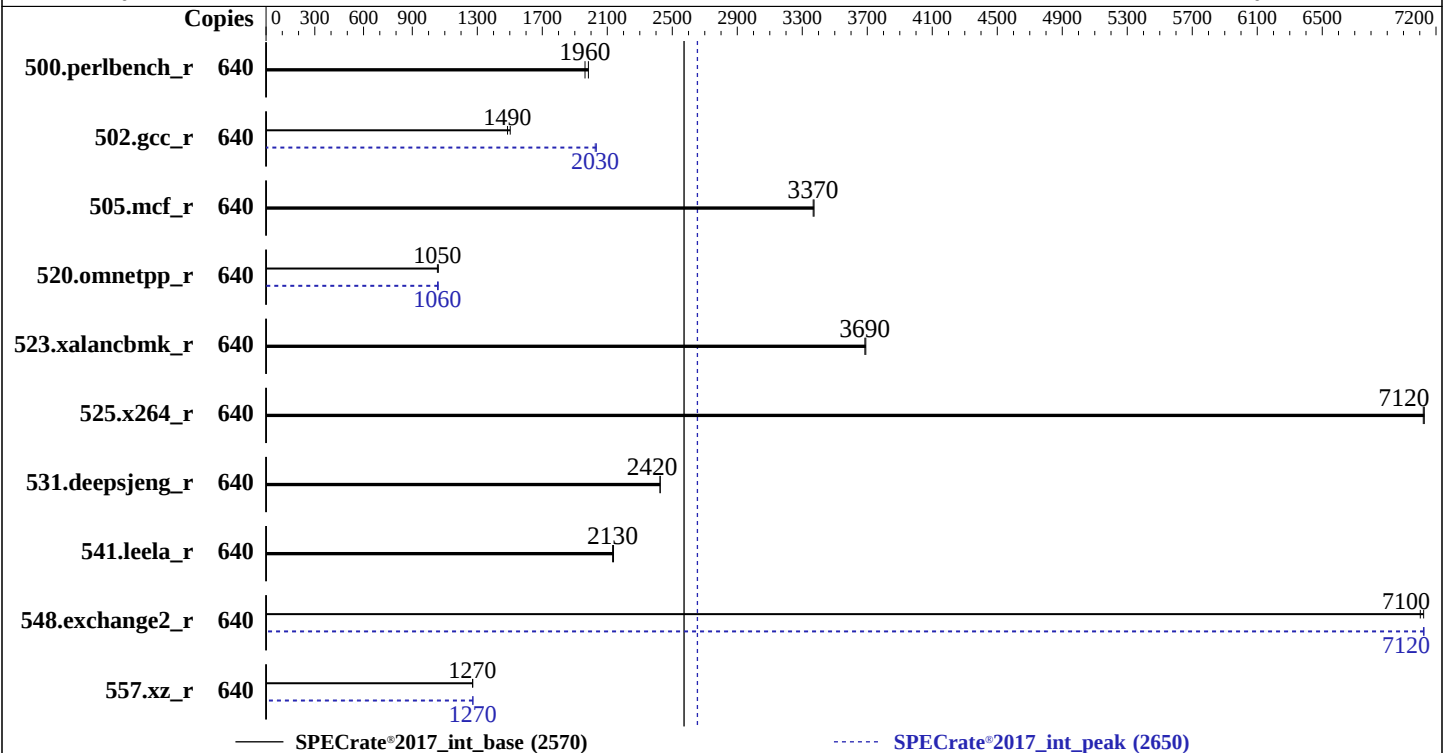
Test Sponsor: Dell Inc.

Tested by: Dell Inc.

Test Date: May-2025

Hardware Availability: Mar-2025

Software Availability: Mar-2025



## 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)  
Storage: 290 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 3 (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 | 640    | <b>519</b> | <b>1960</b> | 514        | 1980        |         |       | 640    | <b>519</b> | <b>1960</b> | 514        | 1980        |         |       |
| 502.gcc_r       | 640    | 603        | 1500        | <b>610</b> | <b>1490</b> |         |       | 640    | 446        | 2030        | <b>447</b> | <b>2030</b> |         |       |
| 505.mcf_r       | 640    | <b>307</b> | <b>3370</b> | 307        | 3370        |         |       | 640    | <b>307</b> | <b>3370</b> | 307        | 3370        |         |       |
| 520.omnetpp_r   | 640    | <b>796</b> | <b>1050</b> | 792        | 1060        |         |       | 640    | <b>796</b> | <b>1060</b> | 792        | 1060        |         |       |
| 523.xalancbmk_r | 640    | <b>183</b> | <b>3690</b> | 183        | 3690        |         |       | 640    | <b>183</b> | <b>3690</b> | 183        | 3690        |         |       |
| 525.x264_r      | 640    | 157        | 7130        | <b>157</b> | <b>7120</b> |         |       | 640    | 157        | 7130        | <b>157</b> | <b>7120</b> |         |       |
| 531.deepsjeng_r | 640    | <b>302</b> | <b>2420</b> | 302        | 2430        |         |       | 640    | <b>302</b> | <b>2420</b> | 302        | 2430        |         |       |
| 541.leela_r     | 640    | 496        | 2140        | <b>497</b> | <b>2130</b> |         |       | 640    | 496        | 2140        | <b>497</b> | <b>2130</b> |         |       |
| 548.exchange2_r | 640    | 235        | 7120        | <b>236</b> | <b>7100</b> |         |       | 640    | 235        | 7130        | <b>235</b> | <b>7120</b> |         |       |
| 557.xz_r        | 640    | <b>544</b> | <b>1270</b> | 543        | 1270        |         |       | 640    | <b>543</b> | <b>1270</b> | 543        | 1270        |         |       |

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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\_A1.3-2/amd\_rate\_aocc500\_znver5\_A\_lib/lib:/mnt/ramdisk/cpu2017-1.1.9-aocc500-znerv5\_A1.3-2/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

Benchmark run from a 290 GB ramdisk created with the cmd: "mount -t tmpfs -o size=290G 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\_A1.3-2/bin/sysinfo  
Rev: r6732 of 2022-11-07 fe91c89b7ed5c36ae2c92cc097bec197  
running on 1234567-R6725 Thu May 15 11:44:19 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
14. Linux kernel boot-time arguments, from /proc/cmdline
15. cpupower frequency-info
16. sysctl

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## Platform Notes (Continued)

```
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-R6725 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
11:44:19 up 7 min, 2 users, load average: 0.43, 0.45, 0.29
USER      TTY      FROM          LOGIN@   IDLE   JCPU   PCPU WHAT
ll        tty1      100.71.176.53 11:39    5:08   0.00s  0.01s sshd: ll [priv]
root      tty1      -             11:42    34.00s 1.84s  0.56s /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            6187694
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=6.2 --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-BIOS-NPS=2
--define DL-VERS=6.2 --output_format html,pdf,txt intrate
runcpu --configfile amd_rate_aocc500_znver5_A1.cfg --tune all --reportable --iterations 2 --define
DL-BIOS-NPS=2 --define DL-VERS=6.2 --output_format html,pdf,txt --nopower --runmode rate --tune base:peak
--size test:train:refrate intrate --nopreenv --note-preenv --logfile
$SPEC/tmp/CPU2017.001/templots/preenv.intrate.001.0.log --lognum 001.0 --from_runcpu 2
specperl $SPEC/bin/sysinfo
$SPEC = /mnt/ramdisk/cpu2017-1.1.9-aocc500-znerv5_A1.3-2
```

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## Platform Notes (Continued)

### 6. /proc/cpuinfo

```
model name      : AMD EPYC 9845 160-Core Processor
vendor_id       : AuthenticAMD
cpu family      : 26
model           : 17
stepping        : 0
microcode       : 0xb101028
bugs            : sysret_ss_attrs spectre_v1 spectre_v2 spec_store_bypass
TLB size        : 192 4K pages
cpu cores       : 160
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 2.39.3:

```
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):            640
On-line CPU(s) list: 0-639
Vendor ID:          AuthenticAMD
BIOS Vendor ID:     AMD
Model name:         AMD EPYC 9845 160-Core Processor
BIOS Model name:    AMD EPYC 9845 160-Core Processor
BIOS CPU family:    107
CPU family:         26
Model:             17
Thread(s) per core: 2
Core(s) per socket: 160
Socket(s):          2
Stepping:           0
Frequency boost:    enabled
CPU(s) scaling MHz: 41%
CPU max MHz:        3718.0659
CPU min MHz:        1500.0000
BogoMIPS:           4194.01
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
                   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
                   xsavec xgetbv1 xsaves cqm_llc cqm_occup_llc cqm_mbm_total
                   cqm_mbm_local user_shstk avx_vnni avx512_bf16 clzero irperf
```

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## Platform Notes (Continued)

xsaverptr 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: 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  
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-IBRS 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      | 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: 386095 MB  
node 0 free: 382854 MB  
node 1 cpus: 80-159,400-479  
node 1 size: 386991 MB  
node 1 free: 385392 MB  
node 2 cpus: 160-239,480-559  
node 2 size: 386964 MB  
node 2 free: 385496 MB  
node 3 cpus: 240-319,560-639  
node 3 size: 386952 MB  
node 3 free: 381488 MB  
node distances:  
node 0 1 2 3  
0: 10 12 32 32  
1: 12 10 32 32  
2: 32 32 10 12

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## Platform Notes (Continued)

3: 32 32 12 10

9. /proc/meminfo

MemTotal: 1584132228 kB

10. who -r

run-level 3 May 15 11:42 last=5

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 NetworkManager NetworkManager-dispatcher NetworkManager-wait-online<br>accounts-daemon anacron apparmor apport avahi-daemon blk-availability bluetooth<br>cloud-config cloud-final cloud-init cloud-init-local console-setup cron cups cups-browsed<br>dmesg e2scrub_reap finalrd getty@ gnome-remote-desktop gpu-manager grub-common<br>grub-initrd-fallback kerneloops keyboard-setup lm-sensors lvm2-monitor multipathd<br>networkd-dispatcher nvidia-hibernate nvidia-resume nvidia-suspend<br>nvidia-suspend-then-hibernate open-iscsi open-vm-tools openvpn pollinate<br>power-profiles-daemon rsyslog secureboot-db setvtrgb ssl-cert switcheroo-control sysstat<br>systemd-networkd systemd-networkd-wait-online systemd-pstore systemd-resolved<br>systemd-timesyncd thermald ua-reboot-cmds ubuntu-advantage udisks2 ufw vgauth<br>wpa_supplicant |
| enabled-runtime | netplan-ovs-cleanup systemd-fsck-root systemd-remount-fs                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| disabled        | brltty console-getty debug-shell iscsid nftables nvidia-powerd openvpn-client@<br>openvpn-server@ openvpn@ rsync rtkit-daemon serial-getty@ speech-dispatcherd ssh<br>systemd-boot-check-no-failures systemd-confext systemd-network-generator<br>systemd-networkd-wait-online@ systemd-pcrlock-file-system systemd-pcrlock-firmware-code<br>systemd-pcrlock-firmware-config systemd-pcrlock-machine-id systemd-pcrlock-make-policy<br>systemd-pcrlock-secureboot-authority systemd-pcrlock-secureboot-policy systemd-sysex<br>systemd-time-wait-sync upower wpa_supplicant-nl80211@ wpa_supplicant-wired@<br>wpa_supplicant@                                                                                                                                                                                                                                            |
| generated       | speech-dispatcher                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| indirect        | saned@ spice-vdagentd systemd-sysupdate systemd-sysupdate-reboot uidd                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| masked          | alsa-utils cryptdisks cryptdisks-early hwclock multipath-tools-boot<br>pulseaudio-enable-autospawn saned screen-cleanup sudo x11-common                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |

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

BOOT\_IMAGE=/vmlinuz-6.8.0-58-generic  
root=/dev/mapper/ubuntu--vg-ubuntu--lv  
ro

15. cpupower frequency-info

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## Platform Notes (Continued)

analyzing CPU 128:

current policy: frequency should be within 1.50 GHz and 2.10 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: 2100MHz

### 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

|                       |       |
|-----------------------|-------|
| 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\_A1.3-2

| Filesystem | Type  | Size | Used | Avail | Use% | Mounted on   |
|------------|-------|------|------|-------|------|--------------|
| tmpfs      | tmpfs | 290G | 3.3G | 287G  | 2%   | /mnt/ramdisk |

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# SPEC CPU®2017 Integer Rate Result

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Dell Inc.

SPECrate®2017\_int\_base = 2570

PowerEdge R6725 (AMD EPYC 9845 160-Core Processor)

SPECrate®2017\_int\_peak = 2650

CPU2017 License: 6573

Test Sponsor: Dell Inc.

Tested by: Dell Inc.

Test Date: May-2025

Hardware Availability: Mar-2025

Software Availability: Mar-2025

## Platform Notes (Continued)

21. /sys/devices/virtual/dmi/id  
Vendor: Dell Inc.  
Product: PowerEdge R6725  
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:  
10x 802C0000802C MTC40F2046S1RC64BD1 64 GB 2 rank 6400  
13x 802C0000802C MTC40F2046S1RC64BD2 64 GB 2 rank 6400  
1x 80CE000080CE M321R8GA0EB2-CCPKC 64 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)

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

(Continued on next page)



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## Compiler Version Notes (Continued)

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

## 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

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SPECrate®2017\_int\_peak = 2650

CPU2017 License: 6573

Test Sponsor: Dell Inc.

Tested by: Dell Inc.

Test Date: May-2025

Hardware Availability: Mar-2025

Software Availability: Mar-2025

## Base Portability Flags (Continued)

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=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
```

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Software Availability: Mar-2025

## Base Other Flags (Continued)

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

502.gcc\_r: -m32 -flto -Wl,-mllvm -Wl,-ldist-scalar-expand  
-fenable-aggressive-gather -Wl,-mllvm -Wl,-extra-inliner

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SPECrate®2017\_int\_peak = 2650

CPU2017 License: 6573

Test Sponsor: Dell Inc.

Tested by: Dell Inc.

Test Date: May-2025

Hardware Availability: Mar-2025

Software Availability: Mar-2025

## Peak Optimization Flags (Continued)

502.gcc\_r (continued):

```
-z muldefs -Ofast -march=znver5 -fveclib=AMDLIBM
-ffast-math -fstruct-layout=7 -mllvm -unroll-threshold=50
-fremap-arrays -fstrip-mining
-mllvm -inline-threshold=1000
-mllvm -reduce-array-computations=3 -zopt -fgnu89-inline
-lamdalloc
```

505.mcf\_r: basepeak = yes

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
-fremap-arrays -fstrip-mining
-mllvm -inline-threshold=1000
-mllvm -reduce-array-computations=3 -zopt -lamdlibm
-lflang -lamdalloc-ext -ldl
```

C++ benchmarks:

```
520.omnetpp_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 -fno-PIE
-no-pie -fvirtual-function-elimination -fvisibility=hidden
-mllvm -do-block-reorder=advanced -lamdlibm -lamdalloc-ext
-ldl
```

523.xalancbmk\_r: basepeak = yes

531.deepsjeng\_r: basepeak = yes

541.leela\_r: basepeak = yes

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
```

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## Peak Optimization Flags (Continued)

Fortran benchmarks (continued):

-Wl, -mllvm -Wl, -enable-iv-split -O3 -march=znver5 -fveclib=AMDLIBM  
-ffast-math -flt0 -fepilog-vectorization-of-inductions  
-mllvm -optimize-strided-mem-cost -floop-transform  
-mllvm -unroll-aggressive -mllvm -unroll-threshold=500 -lamdlibm  
-lflang -lamdalloc -ldl

## 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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Tested with SPEC CPU®2017 v1.1.9 on 2025-05-15 07:44:19-0400.

Report generated on 2025-07-01 19:09:46 by CPU2017 PDF formatter v6716.

Originally published on 2025-07-01.