



SPEC CPU®2017 Integer Rate Result

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New H3C Technologies Co., Ltd.

H3C UniServer R4950 G7 (AMD EPYC 9655)
AMD EPYC 9655

SPECrate®2017_int_base = 2120

SPECrate®2017_int_peak = 2170

CPU2017 License: 9066

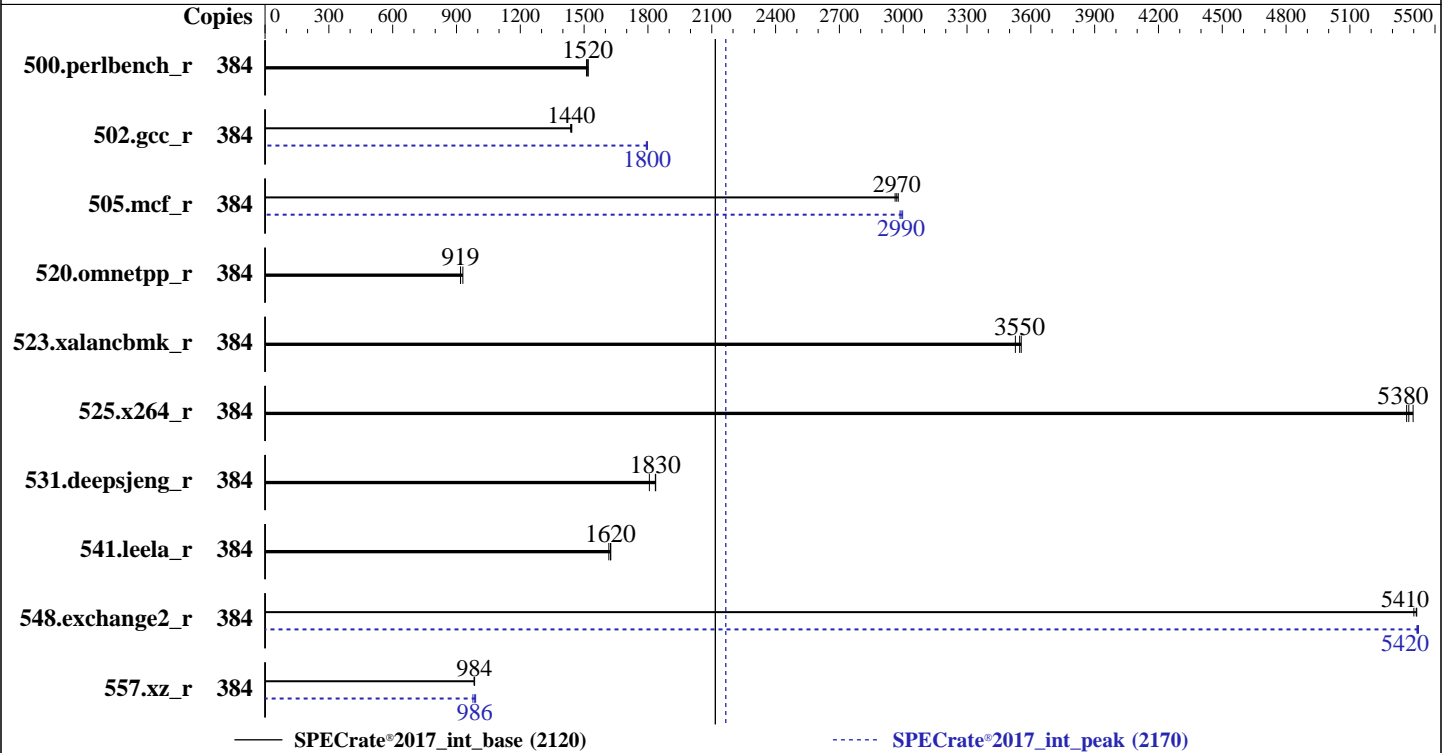
Test Sponsor: New H3C Technologies Co., Ltd.

Tested by: New H3C Technologies Co., Ltd.

Test Date: Jan-2025

Hardware Availability: Oct-2024

Software Availability: Dec-2024



Hardware

CPU Name: AMD EPYC 9655
 Max MHz: 4500
 Nominal: 2600
 Enabled: 192 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: 384 MB I+D on chip per chip, 32 MB shared / 8 cores
 Other: None
 Memory: 1536 GB (24 x 64 GB 2Rx4 PC5-6400B-R, running at 6000)
 Storage: 1 x 3.84TB SSD
 Other: CPU Cooling: Air

Software

OS: Ubuntu 24.04.1 LTS
 kernel version 6.8.0-51-generic
 C/C++/Fortran: Version 5.0.0 of AOCC
 Parallel: No
 Firmware: Version 7.30.05 released Dec-2024
 File System: ext4
 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	384	402	1520	403	1520	405	1510	384	402	1520	403	1520	405	1510
502.gcc_r	384	377	1440	377	1440	378	1440	384	303	1790	303	1800	302	1800
505.mcf_r	384	209	2970	208	2980	210	2960	384	208	2990	207	3000	208	2990
520.omnetpp_r	384	542	930	548	919	548	919	384	542	930	548	919	548	919
523.xalancbmk_r	384	115	3530	114	3550	114	3550	384	115	3530	114	3550	114	3550
525.x264_r	384	125	5380	125	5370	125	5400	384	125	5380	125	5370	125	5400
531.deepsjeng_r	384	240	1840	240	1830	244	1810	384	240	1840	240	1830	244	1810
541.leela_r	384	391	1630	393	1620	392	1620	384	391	1630	393	1620	392	1620
548.exchange2_r	384	186	5410	186	5410	186	5400	384	186	5420	186	5420	186	5420
557.xz_r	384	421	984	421	985	422	983	384	421	986	424	977	419	990

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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 =
"/home/cpu2017/amd_rate_aocc500_znver5_A_lib/lib:/home/cpu2017/amd_rate_aocc500_znver5_A_lib/lib32:/usr/local/mpc-131/lib:/usr/local/gmp-630/lib:/usr/local/mpfr-421/lib:/usr/local/isl-027/lib:/usr/local/gcc-1420/lib64:/usr/local/lib:/usr/lib:/usr/local/amd/aocc-compiler-5.0.0/lib:/usr/local/amd/aocc-compiler-5.0.0/lib32"
MALLOCONF = "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:
SMT Control set to Enabled
SVM Mode set to Disabled
Power Profile Selection set to High Performance Mode
Determinism Slider set to Power
cTDP set to 400
PPT set to 400
NUMA nodes per socket set to NPS 4
ACPI SRAT L3 cache as NUMA domain set to Enabled

Sysinfo program /home/cpu2017/bin/sysinfo
Rev: r6732 of 2022-11-07 fe91c89b7ed5c36ae2c92cc097bec197
running on h3c Tue Jan 21 13:35:54 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-lubuntu8.4)
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
17. /sys/kernel/mm/transparent_hugepage

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Platform Notes (Continued)

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 h3c 6.8.0-51-generic #52-Ubuntu SMP PREEMPT_DYNAMIC Thu Dec 5 13:09:44 UTC 2024 x86_64 x86_64 x86_64
GNU/Linux

2. w
13:35:54 up 2:28, 1 user, load average: 0.23, 0.06, 0.02
USER TTY FROM LOGIN@ IDLE JCPU PCPU WHAT
root tty1 - 13:34 26.00s 1.04s 0.18s /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 6189714
nofiles 1024
vmemory(kbytes) unlimited
locks unlimited
rtprio 0

5. sysinfo process ancestry
/sbin/init
/bin/login -p --
-bash
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 3 intrate
runcpu --configfile amd_rate_aocc500_znver5_A1.cfg --tune all --reportable --iterations 3 --nopower
--runmode rate --tune base:peak --size test:train:refrate intrate --nopreenv --note-preenv --logfile
\$SPEC/tmp/CPU2017.017/temlogs/preenv.intrate.017.0.log --lognum 017.0 --from_runcpu 2
specperl \$SPEC/bin/sysinfo
\$SPEC = /home/cpu2017

6. /proc/cpuinfo
model name : AMD EPYC 9655 96-Core Processor
vendor_id : AuthenticAMD
cpu family : 26
model : 2
stepping : 1
microcode : 0xb00211a

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Platform Notes (Continued)

```

bugs           : sysret_ss_attrs spectre_v1 spectre_v2 spec_store_bypass
TLB size      : 192 4K pages
cpu cores     : 96
siblings      : 192
2 physical ids (chips)
384 processors (hardware threads)
physical id 0: core ids 0-95
physical id 1: core ids 0-95
physical id 0: apicids 0-191
physical id 1: apicids 256-447

```

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):                 384
On-line CPU(s) list:   0-383
Vendor ID:              AuthenticAMD
BIOS Vendor ID:        Advanced Micro Devices, Inc.
Model name:             AMD EPYC 9655 96-Core Processor
BIOS Model name:       AMD EPYC 9655 96-Core Processor
BIOS CPU family:       107
CPU family:             26
Model:                  2
Thread(s) per core:    2
Core(s) per socket:    96
Socket(s):              2
Stepping:               1
Frequency boost:        enabled
CPU(s) scaling MHz:    36%
CPU max MHz:            4509.3750
CPU min MHz:            1500.0000
BogoMIPS:               5187.94
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 bpeext
                        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 erms 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
                        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 x2avic v_spec_ctrl vnni
                        avx512vbmi umip pku ospke avx512_vbmi2 gfni vaes vpclmulqdq
                        avx512_vnni avx512_bitalg avx512_vpoptndq la57 rdpid bus_lock_detect
                        movdiri movdir64b overflow_recov succor smca fsrm avx512_vp2intersect
                        flush_lld debug_swap
Lld cache:             9 MiB (192 instances)

```

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Platform Notes (Continued)

```

L1i cache:                6 MiB (192 instances)
L2 cache:                 192 MiB (192 instances)
L3 cache:                 768 MiB (24 instances)
NUMA node(s):             24
NUMA node0 CPU(s):       0-7,192-199
NUMA node1 CPU(s):       8-15,200-207
NUMA node2 CPU(s):       16-23,208-215
NUMA node3 CPU(s):       24-31,216-223
NUMA node4 CPU(s):       32-39,224-231
NUMA node5 CPU(s):       40-47,232-239
NUMA node6 CPU(s):       48-55,240-247
NUMA node7 CPU(s):       56-63,248-255
NUMA node8 CPU(s):       64-71,256-263
NUMA node9 CPU(s):       72-79,264-271
NUMA node10 CPU(s):      80-87,272-279
NUMA node11 CPU(s):      88-95,280-287
NUMA node12 CPU(s):      96-103,288-295
NUMA node13 CPU(s):     104-111,296-303
NUMA node14 CPU(s):     112-119,304-311
NUMA node15 CPU(s):     120-127,312-319
NUMA node16 CPU(s):     128-135,320-327
NUMA node17 CPU(s):     136-143,328-335
NUMA node18 CPU(s):     144-151,336-343
NUMA node19 CPU(s):     152-159,344-351
NUMA node20 CPU(s):     160-167,352-359
NUMA node21 CPU(s):     168-175,360-367
NUMA node22 CPU(s):     176-183,368-375
NUMA node23 CPU(s):     184-191,376-383
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:    Vulnerable
Vulnerability Spectre v1:           Vulnerable: __user pointer sanitization and usercopy barriers only;
no swapgs barriers
Vulnerability Spectre v2:           Vulnerable; IBPB: disabled; STIBP: disabled; PBRB-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	9M	12	Data	1	64	1	64
L1i	32K	6M	8	Instruction	1	64	1	64
L2	1M	192M	16	Unified	2	1024	1	64
L3	32M	768M	16	Unified	3	32768	1	64

8. numactl --hardware

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

```

available: 24 nodes (0-23)
node 0 cpus: 0-7,192-199
node 0 size: 63933 MB
node 0 free: 63691 MB
node 1 cpus: 8-15,200-207

```

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Platform Notes (Continued)

```

node 1 size: 64506 MB
node 1 free: 64314 MB
node 2 cpus: 16-23,208-215
node 2 size: 64506 MB
node 2 free: 64306 MB
node 3 cpus: 24-31,216-223
node 3 size: 64506 MB
node 3 free: 64338 MB
node 4 cpus: 32-39,224-231
node 4 size: 64506 MB
node 4 free: 64333 MB
node 5 cpus: 40-47,232-239
node 5 size: 64506 MB
node 5 free: 64245 MB
node 6 cpus: 48-55,240-247
node 6 size: 64506 MB
node 6 free: 64362 MB
node 7 cpus: 56-63,248-255
node 7 size: 64506 MB
node 7 free: 64361 MB
node 8 cpus: 64-71,256-263
node 8 size: 64506 MB
node 8 free: 64352 MB
node 9 cpus: 72-79,264-271
node 9 size: 64506 MB
node 9 free: 64352 MB
node 10 cpus: 80-87,272-279
node 10 size: 64506 MB
node 10 free: 64306 MB
node 11 cpus: 88-95,280-287
node 11 size: 64506 MB
node 11 free: 64307 MB
node 12 cpus: 96-103,288-295
node 12 size: 64506 MB
node 12 free: 64334 MB
node 13 cpus: 104-111,296-303
node 13 size: 64506 MB
node 13 free: 64355 MB
node 14 cpus: 112-119,304-311
node 14 size: 64506 MB
node 14 free: 64298 MB
node 15 cpus: 120-127,312-319
node 15 size: 64506 MB
node 15 free: 64335 MB
node 16 cpus: 128-135,320-327
node 16 size: 64506 MB
node 16 free: 64361 MB
node 17 cpus: 136-143,328-335
node 17 size: 64506 MB
node 17 free: 64326 MB
node 18 cpus: 144-151,336-343
node 18 size: 64506 MB
node 18 free: 64342 MB
node 19 cpus: 152-159,344-351
node 19 size: 64506 MB
node 19 free: 64280 MB
node 20 cpus: 160-167,352-359
node 20 size: 64506 MB
node 20 free: 64352 MB
node 21 cpus: 168-175,360-367

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Platform Notes (Continued)

node 21 size: 64506 MB
node 21 free: 64347 MB
node 22 cpus: 176-183,368-375
node 22 size: 64506 MB
node 22 free: 64295 MB
node 23 cpus: 184-191,376-383
node 23 size: 64424 MB
node 23 free: 64274 MB
node distances:

node	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
0:	10	11	11	12	12	12	12	12	12	12	12	12	22	22	22	22	22	22	22	22	22	22	22	22
1:	11	10	11	12	12	12	12	12	12	12	12	12	22	22	22	22	22	22	22	22	22	22	22	22
2:	11	11	10	12	12	12	12	12	12	12	12	12	22	22	22	22	22	22	22	22	22	22	22	22
3:	12	12	12	10	11	11	12	12	12	12	12	12	22	22	22	22	22	22	22	22	22	22	22	22
4:	12	12	12	11	10	11	12	12	12	12	12	12	22	22	22	22	22	22	22	22	22	22	22	22
5:	12	12	12	11	11	10	12	12	12	12	12	12	22	22	22	22	22	22	22	22	22	22	22	22
6:	12	12	12	12	12	12	10	11	11	12	12	12	22	22	22	22	22	22	22	22	22	22	22	22
7:	12	12	12	12	12	12	11	10	11	12	12	12	22	22	22	22	22	22	22	22	22	22	22	22
8:	12	12	12	12	12	12	11	11	10	12	12	12	22	22	22	22	22	22	22	22	22	22	22	22
9:	12	12	12	12	12	12	12	12	12	10	11	11	22	22	22	22	22	22	22	22	22	22	22	22
10:	12	12	12	12	12	12	12	12	12	11	10	11	22	22	22	22	22	22	22	22	22	22	22	22
11:	12	12	12	12	12	12	12	12	12	11	11	10	22	22	22	22	22	22	22	22	22	22	22	22
12:	22	22	22	22	22	22	22	22	22	22	22	22	10	11	11	12	12	12	12	12	12	12	12	12
13:	22	22	22	22	22	22	22	22	22	22	22	22	11	10	11	12	12	12	12	12	12	12	12	12
14:	22	22	22	22	22	22	22	22	22	22	22	22	11	11	10	12	12	12	12	12	12	12	12	12
15:	22	22	22	22	22	22	22	22	22	22	22	22	12	12	12	10	11	11	12	12	12	12	12	12
16:	22	22	22	22	22	22	22	22	22	22	22	22	12	12	12	11	10	11	12	12	12	12	12	12
17:	22	22	22	22	22	22	22	22	22	22	22	22	12	12	12	11	11	10	12	12	12	12	12	12
18:	22	22	22	22	22	22	22	22	22	22	22	22	12	12	12	12	12	12	10	11	11	12	12	12
19:	22	22	22	22	22	22	22	22	22	22	22	22	12	12	12	12	12	12	11	10	11	12	12	12
20:	22	22	22	22	22	22	22	22	22	22	22	22	12	12	12	12	12	12	11	11	10	12	12	12
21:	22	22	22	22	22	22	22	22	22	22	22	22	12	12	12	12	12	12	12	12	12	10	11	11
22:	22	22	22	22	22	22	22	22	22	22	22	22	12	12	12	12	12	12	12	12	12	11	10	11
23:	22	22	22	22	22	22	22	22	22	22	22	22	12	12	12	12	12	12	12	12	12	11	11	10

9. /proc/meminfo
MemTotal: 1584639668 kB

10. who -r
run-level 3 Jan 21 11:07

11. Systemd service manager version: systemd 255 (255.4-lubuntu8.4)
Default Target Status
multi-user degraded

12. Failed units, from systemctl list-units --state=failed
UNIT LOAD ACTIVE SUB DESCRIPTION
* fwupd-refresh.service loaded failed failed Refresh fwupd metadata and update motd
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

(Continued on next page)



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Platform Notes (Continued)

```

enabled      ModemManager NetworkManager NetworkManager-dispatcher NetworkManager-wait-online 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 snapd sysstat systemd-networkd
systemd-networkd-wait-online systemd-pstore systemd-resolved systemd-timesyncd thermald
ua-reboot-cmds ubuntu-advantage udisks2 ufw unattended-upgrades vgauth wpa_supplicant

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 wpa_supplicant-nl80211@ wpa_supplicant-wired@
wpa_supplicant@

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=/vmlinuz-6.8.0-51-generic
root=UUID=5079c432-fd48-464d-92df-94ceb7591bc8
ro
iommu=pt
mitigations=off
security=none

```

15. cpupower frequency-info

```

analyzing CPU 212:
  current policy: frequency should be within 1.50 GHz and 2.60 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: 2600MHz

```

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

```

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Platform Notes (Continued)

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 24.04.1 LTS

20. Disk information
SPEC is set to: /home/cpu2017
Filesystem Type Size Used Avail Use% Mounted on
/dev/sda4 ext4 3.4T 20G 3.2T 1% /

21. /sys/devices/virtual/dmi/id
Vendor: AMD Corporation
Product: Quartz
Product Family: Rack

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 Samsung M321R8GA0EB2-CCPPC 64 GB 2 rank 6400, configured at 6000

23. BIOS
(This section combines info from /sys/devices and dmidecode.)
BIOS Vendor: American Megatrends International, LLC.
BIOS Version: 7.30.05
BIOS Date: 12/20/2024
BIOS Revision: 5.35
Firmware Revision: 2.1

Compiler Version Notes

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

(Continued on next page)



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Compiler Version Notes (Continued)

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

=====
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



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Test Date: Jan-2025

Hardware Availability: Oct-2024

Software Availability: Dec-2024

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,-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
```

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Base Optimization Flags (Continued)

C++ benchmarks (continued):

-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

Peak Compiler Invocation

C benchmarks:

clang

C++ benchmarks:

clang++

Fortran benchmarks:

flang



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Software Availability: Dec-2024

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
-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
```

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Peak Optimization Flags (Continued)

557.xz_r (continued):

```
-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: 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
-Wl,-mllvm -Wl,-enable-iv-split -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
```

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/New_H3C-Platform-AMD-Settings-V1.5-Turin.html



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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/New_H3C-Platform-AMD-Settings-V1.5-Turin.xml

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