SPEC CPU®2017 Integer Rate Result

Hewlett Packard Enterprise

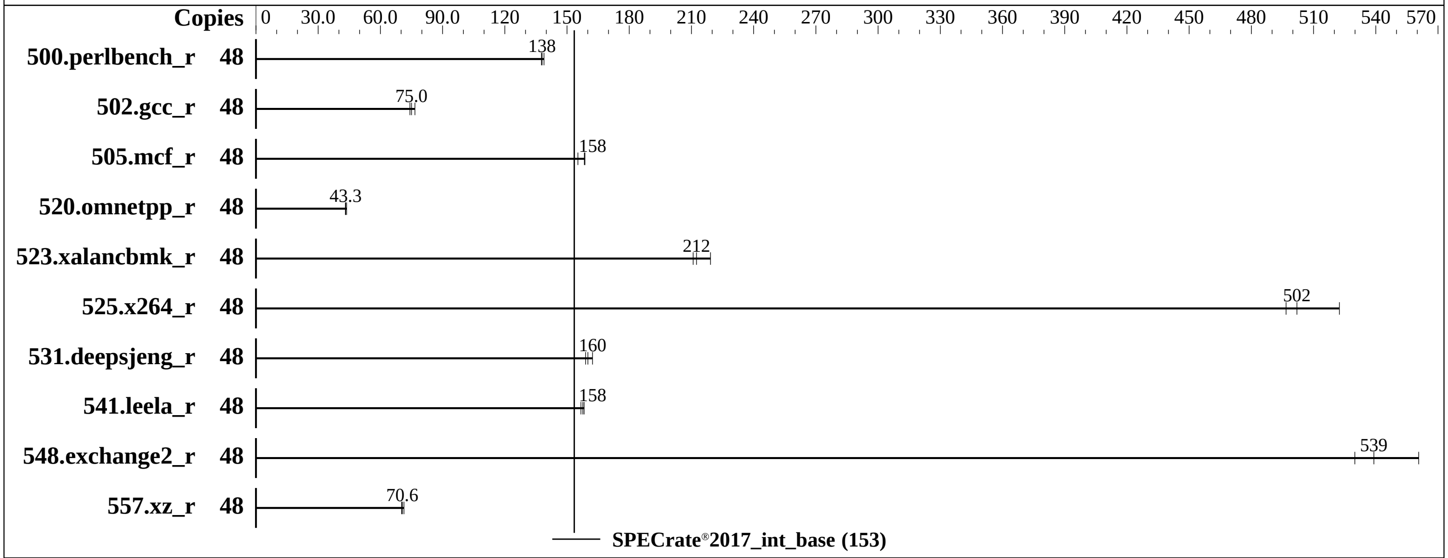
(Test Sponsor: HPE)

Virtual Machine Instance on ProLiant Compute DL345 Gen12 (2.25 GHz, AMD EPYC 9965)

SPECrate®2017_int_base = 153

SPECrate®2017_int_peak = Not Run

CPU2017 License:	3	**Test Date:**	Oct-2025
Test Sponsor:	HPE	**Hardware Availability:**	Aug-2025
Tested by:	HPE	**Software Availability:**	Sep-2025



Hardware

CPU Name:	AMD EPYC 9965
Max MHz:	3700
Nominal:	2250
Enabled:	192 cores, 1 chip, 2 threads/core
Orderable:	1 chip
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 / 16 cores
Other:	None
Memory:	1536 GB (24 x 64 GB 2Rx4 PC5-6400B-R, running at 4000)
Storage:	1 x 3.2TB NVMe SSD
Other:	CPU Cooling: Air

Software

OS:	Ubuntu 24.04.2 LTS Kernel 6.8.0-86-generic
Compiler:	C/C++/Fortran: Version 5.0.0 of AOCC
Parallel:	No
Firmware:	HPE BIOS Version 1.30 09/05/2025 released Sep-2025
File System:	ext4
System State:	Run level 5 (multi-user)
Base Pointers:	64-bit
Peak Pointers:	Not Applicable
Other:	HPE Morpheus VM Essentials Software version 8.0.9 (Hypervisor OS and software supporting HPE VM Essentials)
Power Management:	BIOS was set to prefer performance at the cost of additional power

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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	48	555	138	550	139	**554**	**138**							
502.gcc_r	48	**906**	**75.0**	887	76.7	915	74.2							
505.mcf_r	48	489	159	**490**	**158**	500	155							
520.omnetpp_r	48	1440	43.7	1461	43.1	**1456**	**43.3**							
523.xalancbmk_r	48	240	211	**239**	**212**	231	219							
525.x264_r	48	**167**	**502**	169	497	161	522							
531.deepsjeng_r	48	339	162	346	159	**344**	**160**							
541.leela_r	48	502	158	**504**	**158**	507	157							
548.exchange2_r	48	237	530	**233**	**539**	224	561							
557.xz_r	48	**735**	**70.6**	738	70.3	726	71.4							

SPECrate®2017_int_base = 153
SPECrate®2017_int_peak = Not Run

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.
```

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 Configuration on the SUT hosting this virtual machine instance:
Workload Profile set to Virtualization - Max Performance
Determinism Control set to Manual
Performance Determinism set to Power Deterministic
NUMA memory domains per socket set to Four memory domains per socket
Thermal Configuration set to Maximum Cooling

Virtual machine configuration (1 of 8):
This virtual machine was hosted in a ProLiant Compute DL345 Gen12 system, configured with
1 x AMD EPYC 9965 processor and 1536 GB of memory (24 x 64 GB 2Rx4 PC5-6400B-R). The virtual machine
instance was provisioned with 48 vCPUs, 148 GB memory and 500 GB of storage. The VM was affinitized to
cores 0-47 using KVM vcpu pinning.

The memory and storage information reported in the guest are incorrect. The correct
memory and storage allocations for this virtual machine are documented in this section.
so that this may be verified against the documented firmware version information in the result.

dmidecode -t bios
# dmidecode 3.5
Getting SMBIOS data from sysfs.
SMBIOS 3.7.0 present.
# SMBIOS implementations newer than version 3.5.0 are not
# fully supported by this version of dmidecode.

Handle 0x0006, DMI type 0, 26 bytes
BIOS Information
 Vendor: HPE
 Version: 1.30
 Release Date: 09/05/2025
 Address: 0xF0000
 Runtime Size: 64 kB
 ROM Size: 64 MB
 Characteristics:
  PCI is supported
  PNP is supported
  BIOS is upgradeable
  BIOS shadowing is allowed
  ESCD support is available
  Boot from CD is supported
```

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Platform Notes (Continued)

```
    Selectable boot is supported
    EDD is supported
    5.25"/360 kB floppy services are supported (int 13h)
    5.25"/1.2 MB floppy services are supported (int 13h)
    3.5"/720 kB floppy services are supported (int 13h)
    Print screen service is supported (int 5h)
    8042 keyboard services are supported (int 9h)
    Serial services are supported (int 14h)
    Printer services are supported (int 17h)
    CGA/mono video services are supported (int 10h)
    ACPI is supported
    USB legacy is supported
    BIOS boot specification is supported
    Function key-initiated network boot is supported
    Targeted content distribution is supported
    UEFI is supported
    Manufacturing mode is supported
    BIOS Revision: 1.30
    Firmware Revision: 1.18

  Follow these steps to set up the VMs with the required resources and affinity:
  Create a service plan that allows customizing resource limits during instance creation
     Follow the steps documented in the HPE VM Essentials Guide for Service Plan creation
     Choose an appropriate name for the plan (example, systemperf).
     Set â  PROVISION TYPEâ   to KVM
     Set â  STORAGEâ   to 500 GB
     Set â  MEMORYâ   to 158913 (148 GB), and enable the â  CUSTOM MEMORYâ   option
     Set â  CORE COUNTâ   to 48, and enable the â  CUSTOM CORESâ   option
  Follow the on-screen steps to complete instance creation
  Login to the hypervisor host as root
  If the instance just created is active, shut it down with â  virsh shutdown <domain>â
  (domain is the VM identifier)
  Edit the domain xml configuration with â  virsh edit <domain>â
  To enable vcpu pinning, replace the <vcpu> section with the following:
  <vcpu placement='static' cpuset=â  192-239'>48</vcpu>
  Start the VM

   Sysinfo program /home/cpu2017/bin/sysinfo
   Rev: r6732 of 2022-11-07 fe91c89b7ed5c36ae2c92cc097bec197
   running on dl345g12-vm1 Mon Oct 27 18:44:15 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 (255.4-1ubuntu8.8)
   12. Services, from systemctl list-unit-files
   13. Linux kernel boot-time arguments, from /proc/cmdline
   14. cpupower frequency-info
```

(Continued on next page)

Platform Notes (Continued)

```
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
------------------------------------------------------------

------------------------------------------------------------
1. uname -a
  Linux dl345g12-vm1 6.8.0-86-generic #87-Ubuntu SMP PREEMPT_DYNAMIC Mon Sep 22 18:03:36 UTC 2025 x86_64
  x86_64 x86_64 GNU/Linux

------------------------------------------------------------
2. w
   18:44:15 up 18 min,  2 users,  load average: 0.07, 0.02, 0.00
  USER     TTY      FROM             LOGIN@   IDLE   JCPU   PCPU  WHAT
  vm1user           172.17.1.80      18:28   18:23   0.00s  0.01s sshd: vm1user [priv]
  vm1user           172.17.1.80      18:28   18:23   0.00s   ?    sshd: vm1user [priv]

------------------------------------------------------------
3. Username
  From environment variable $USER:  root
  From the command 'logname':       vm1user

------------------------------------------------------------
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              607211
  nofiles              1024
  vmemory(kbytes)      unlimited
  locks                unlimited
  rtprio               0

------------------------------------------------------------
5. sysinfo process ancestry
 /sbin/init
 sshd: vm1user [priv]
 sshd: vm1user@pts/0
 -bash
 sudo bash
 sudo bash
 bash
 python3 ./run_intrate.py
 /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/CPU2017.003/templogs/preenv.intrate.003.0.log --lognum 003.0 --from_runcpu 2
 specperl $SPEC/bin/sysinfo
$SPEC = /home/cpu2017
```

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Platform Notes (Continued)

```
------------------------------------------------------------
6. /proc/cpuinfo
    model name      : AMD EPYC 9965 192-Core Processor
    vendor_id       : AuthenticAMD
    cpu family      : 26
    model           : 17
    stepping        : 0
    microcode       : 0xb10104f
    bugs            : sysret_ss_attrs spectre_v1 spectre_v2 spec_store_bypass ibpb_no_ret
    TLB size        : 1024 4K pages
    cpu cores       : 1
    siblings        : 1
    48 physical ids (chips)
    48 processors (hardware threads)
    physical id 0: core ids 0
    physical id 1: core ids 0
    physical id 2: core ids 0
    physical id 3: core ids 0
    physical id 4: core ids 0
    physical id 5: core ids 0
    physical id 6: core ids 0
    physical id 7: core ids 0
    physical id 8: core ids 0
    physical id 9: core ids 0
    physical id 10: core ids 0
    physical id 11: core ids 0
    physical id 12: core ids 0
    physical id 13: core ids 0
    physical id 14: core ids 0
    physical id 15: core ids 0
    physical id 16: core ids 0
    physical id 17: core ids 0
    physical id 18: core ids 0
    physical id 19: core ids 0
    physical id 20: core ids 0
    physical id 21: core ids 0
    physical id 22: core ids 0
    physical id 23: core ids 0
    physical id 24: core ids 0
    physical id 25: core ids 0
    physical id 26: core ids 0
    physical id 27: core ids 0
    physical id 28: core ids 0
    physical id 29: core ids 0
    physical id 30: core ids 0
    physical id 31: core ids 0
    physical id 32: core ids 0
    physical id 33: core ids 0
    physical id 34: core ids 0
    physical id 35: core ids 0
    physical id 36: core ids 0
    physical id 37: core ids 0
    physical id 38: core ids 0
    physical id 39: core ids 0
    physical id 40: core ids 0
    physical id 41: core ids 0
    physical id 42: core ids 0
    physical id 43: core ids 0
    physical id 44: core ids 0
    physical id 45: core ids 0
```

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Platform Notes (Continued)

```
      physical id 46: core ids 0
      physical id 47: core ids 0
      physical id 0: apicids 0
      physical id 1: apicids 1
      physical id 2: apicids 2
      physical id 3: apicids 3
      physical id 4: apicids 4
      physical id 5: apicids 5
      physical id 6: apicids 6
      physical id 7: apicids 7
      physical id 8: apicids 8
      physical id 9: apicids 9
      physical id 10: apicids 10
      physical id 11: apicids 11
      physical id 12: apicids 12
      physical id 13: apicids 13
      physical id 14: apicids 14
      physical id 15: apicids 15
      physical id 16: apicids 16
      physical id 17: apicids 17
      physical id 18: apicids 18
      physical id 19: apicids 19
      physical id 20: apicids 20
      physical id 21: apicids 21
      physical id 22: apicids 22
      physical id 23: apicids 23
      physical id 24: apicids 24
      physical id 25: apicids 25
      physical id 26: apicids 26
      physical id 27: apicids 27
      physical id 28: apicids 28
      physical id 29: apicids 29
      physical id 30: apicids 30
      physical id 31: apicids 31
      physical id 32: apicids 32
      physical id 33: apicids 33
      physical id 34: apicids 34
      physical id 35: apicids 35
      physical id 36: apicids 36
      physical id 37: apicids 37
      physical id 38: apicids 38
      physical id 39: apicids 39
      physical id 40: apicids 40
      physical id 41: apicids 41
      physical id 42: apicids 42
      physical id 43: apicids 43
      physical id 44: apicids 44
      physical id 45: apicids 45
      physical id 46: apicids 46
      physical id 47: apicids 47
    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
```

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Platform Notes (Continued)

```
   Byte Order:                          Little Endian
   CPU(s):                              48
   On-line CPU(s) list:                 0-47
   Vendor ID:                           AuthenticAMD
   BIOS Vendor ID:                      QEMU
   Model name:                          AMD EPYC 9965 192-Core Processor
   BIOS Model name:                     pc-q35-8.2  CPU @ 2.0GHz
   BIOS CPU family:                     1
   CPU family:                          26
   Model:                               17
   Thread(s) per core:                  1
   Core(s) per socket:                  1
   Socket(s):                           48
   Stepping:                            0
   BogoMIPS:                            4493.24
   Flags:                               fpu vme de pse tsc msr pae mce cx8 apic sep mtrr pge mca cmov pat
                                        pse36 clflush mmx fxsr sse sse2 syscall nx mmxext fxsr_opt pdpe1gb
                                        rdtscp lm rep_good nopl cpuid extd_apicid tsc_known_freq pni
                                        pclmulqdq ssse3 fma cx16 pcid sse4_1 sse4_2 movbe popcnt
                                        tsc_deadline_timer aes xsave avx f16c rdrand hypervisor lahf_lm
                                        cmp_legacy svm cr8_legacy abm sse4a misalignsse 3dnowprefetch osvw
                                        perfctr_core ssbd ibrs ibpb stibp ibrs_enhanced vmmcall fsgsbase
                                        tsc_adjust bmi1 avx2 smep bmi2 erms invpcid avx512f avx512dq rdseed
                                        adx smap avx512ifma clflushopt clwb avx512cd sha_ni avx512bw avx512vl
                                        xsaveopt xsavec xgetbv1 xsaves avx_vnni avx512_bf16 clzero xsaveerptr
                                        wbnoinvd arat npt lbrv nrip_save tsc_scale vmcb_clean flushbyasid
                                        pausefilter pfthreshold v_vmsave_vmload vgif vnmi avx512vbmi umip pku
                                        ospke avx512_vbmi2 gfni vaes vpclmulqdq avx512_vnni avx512_bitalg
                                        avx512_vpopcntdq la57 rdpid movdiri movdir64b fsrm
                                        avx512_vp2intersect flush_l1d arch_capabilities
   Virtualization:                      AMD-V
   Hypervisor vendor:                   Microsoft
   Virtualization type:                 full
   L1d cache:                           3 MiB (48 instances)
   L1i cache:                           3 MiB (48 instances)
   L2 cache:                            24 MiB (48 instances)
   L3 cache:                            768 MiB (48 instances)
   NUMA node(s):                        1
   NUMA node0 CPU(s):                   0-47
   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
                                        disabled; RSB filling; PBRSB-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       64K       3M    2 Data            1   512        1             64
      L1i       64K       3M    2 Instruction     1   512        1             64
      L2       512K      24M   16 Unified         2   512        1             64
```

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Platform Notes (Continued)

```
     L3        16M     768M   16 Unified         3 16384        1             64

 ------------------------------------------------------------
 8. numactl --hardware
 NOTE: a numactl 'node' might or might not correspond to a physical chip.
   available: 1 nodes (0)
   node 0 cpus: 0-47
   node 0 size: 151880 MB
   node 0 free: 151067 MB
   node distances:
   node   0
     0:  10

 ------------------------------------------------------------
 9. /proc/meminfo
    MemTotal:       155525896 kB

 ------------------------------------------------------------
 10. who -r
   run-level 5 Oct 27 18:25

 ------------------------------------------------------------
 11. Systemd service manager version: systemd 255 (255.4-1ubuntu8.8)
   Default Target  Status
   graphical       running

 ------------------------------------------------------------
 12. 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 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
   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-sysext
                    systemd-time-wait-sync upower
   indirect         systemd-sysupdate systemd-sysupdate-reboot uuidd
   masked           cryptdisks cryptdisks-early hwclock multipath-tools-boot screen-cleanup sudo x11-common

 ------------------------------------------------------------
 13. Linux kernel boot-time arguments, from /proc/cmdline
   BOOT_IMAGE=/vmlinuz-6.8.0-86-generic
   root=/dev/mapper/ubuntu--vg-ubuntu--lv
   ro

 ------------------------------------------------------------
 14. cpupower frequency-info
   analyzing CPU 30:
     Unable to determine current policy
     boost state support:
       Supported: no
       Active: no
```

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Platform Notes (Continued)

```
------------------------------------------------------------
15. sysctl
  kernel.numa_balancing               0
  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
  enabled         [always] madvise 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 Ubuntu 24.04.2 LTS

------------------------------------------------------------
19. Disk information
SPEC is set to: /home/cpu2017
  Filesystem                        Type  Size  Used Avail Use% Mounted on
  /dev/mapper/ubuntu--vg-ubuntu--lv ext4  490G   18G  452G   4% /

------------------------------------------------------------
20. /sys/devices/virtual/dmi/id
    Vendor:         Morpheus
    Product:        MVM
    Serial:         988FAA01-ED0C-417D-89F9-32690C48CCCC

------------------------------------------------------------
21. 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
```

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Platform Notes (Continued)

```
   determined", but the intent may not be met, as there are frequent changes to hardware, firmware, and the
   "DMTF SMBIOS" standard.
   Memory:
     9x QEMU Not Specified 16 GB
     1x QEMU Not Specified 7162 MB


 ------------------------------------------------------------
 22. BIOS
 (This section combines info from /sys/devices and dmidecode.)
    BIOS Vendor:       SeaBIOS
    BIOS Version:      1.16.3-debian-1.16.3-2
    BIOS Date:         04/01/2014
    BIOS Revision:     0.0
```

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
--------------------------------------------------------------------------------------------------------------

==============================================================================================================
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

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

The flags files that were used to format this result can be browsed at
http://www.spec.org/cpu2017/flags/HPE-Platform-Flags-AMD-Turin-rev1.9.html
http://www.spec.org/cpu2017/flags/aocc500-flags.html

You can also download the XML flags sources by saving the following links:
http://www.spec.org/cpu2017/flags/HPE-Platform-Flags-AMD-Turin-rev1.9.xml
http://www.spec.org/cpu2017/flags/aocc500-flags.xml

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