



SPEC CPU®2017 Integer Rate Result

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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

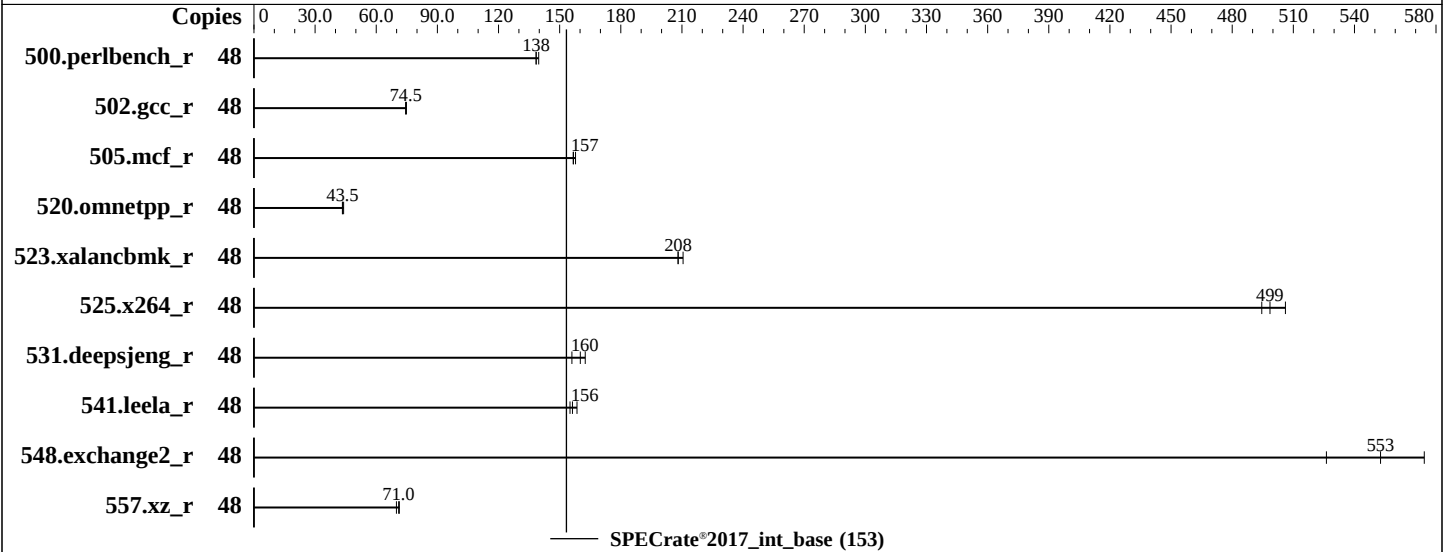
Test Sponsor: HPE

Tested by: HPE

Test Date: Oct-2025

Hardware Availability: Aug-2025

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	<u>552</u>	<u>138</u>	552	138	547	140							
502.gcc_r	48	908	74.8	913	74.5	<u>912</u>	<u>74.5</u>							
505.mcf_r	48	492	158	495	157	<u>495</u>	<u>157</u>							
520.omnetpp_r	48	1432	44.0	<u>1447</u>	<u>43.5</u>	1451	43.4							
523.xalancbmk_r	48	241	211	<u>244</u>	<u>208</u>	244	208							
525.x264_r	48	170	495	<u>169</u>	<u>499</u>	166	506							
531.deepsjeng_r	48	338	163	<u>344</u>	<u>160</u>	353	156							
541.leela_r	48	501	159	<u>509</u>	<u>156</u>	513	155							
548.exchange2_r	48	239	526	<u>228</u>	<u>553</u>	219	574							
557.xz_r	48	<u>730</u>	<u>71.0</u>	742	69.9	727	71.3							

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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.

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"



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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 (4 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 affinityized to cores 144-191 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
    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)
```

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Platform Notes (Continued)

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 "PROVISION TYPE" to KVM
Set "STORAGE" to 500 GB
Set "MEMORY" to 158913 (148 GB), and enable the "CUSTOM MEMORY" option
Set "CORE COUNT" to 48, and enable the "CUSTOM CORES" 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 "virsh shutdown <domain>"
(domain is the VM identifier)

Edit the domain xml configuration with "virsh edit <domain>"

To enable vcpu pinning, replace the <vcpu> section with the following:

```
<vcpu placement='static' cpuset='192-239'>48</vcpu>
```

Start the VM

Sysinfo program /home/cpu2017/bin/sysinfo
Rev: r6732 of 2022-11-07 fe91c89b7ed5c36ae2c92cc097bec197
running on dl345g12-vm4 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
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

(Continued on next page)



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Platform Notes (Continued)

```
1. uname -a
Linux dl345g12-vm4 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: 0.00, 0.00, 0.00
USER      TTY      FROM            LOGIN@   IDLE   JCPU   PCPU   WHAT
vm1user   pts/0    172.17.1.80     18:35   17:59   0.00s  0.01s  sshd: vm1user [priv]
vm1user   pts/0    172.17.1.80     18:35   17:59   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/temlogs/preenv.intrate.003.0.log --lognum 003.0 --from_runcpu 2
specperl $SPEC/bin/sysinfo
$SPEC = /home/cpu2017
```

```
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
```

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Platform Notes (Continued)

```
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
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
```

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Platform Notes (Continued)

```
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
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

(Continued on next page)



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Platform Notes (Continued)

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_lld 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; PBRBS-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
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: 151043 MB

(Continued on next page)



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Platform Notes (Continued)

node distances:

node 0
0: 10

9. /proc/meminfo

MemTotal: 155525892 kB

10. who -r

run-level 5 Oct 27 18:26

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-sysex
systemd-time-wait-sync upower
indirect systemd-sysupdate systemd-sysupdate-reboot uuid
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 12:
Unable to determine current policy
boost state support:
Supported: no
Active: no

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

(Continued on next page)



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Platform Notes (Continued)

```
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   17G  452G   4% /
-----
```

```
-----
20. /sys/devices/virtual/dmi/id
Vendor:      Morpheus
Product:     MVM
Serial:      96CB59BA-87CA-492F-9FC4-845BC965EA37
-----
```

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

(Continued on next page)



SPEC CPU®2017 Integer Rate Result

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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 Sponsor: HPE

Tested by: HPE

Test Date: Oct-2025

Hardware Availability: Aug-2025

Software Availability: Sep-2025

Platform Notes (Continued)

(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

(Continued on next page)



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Base Portability Flags (Continued)

502.gcc_r: -DSPEC_LP64
505.mcf_r: -DSPEC_LP64
520.omnetpp_r: -DSPEC_LP64
523.xalancbmk_r: -DSPEC_LINUX -DSPEC_LP64
525.x264_r: -DSPEC_LP64
531.deepsjeng_r: -DSPEC_LP64
541.leela_r: -DSPEC_LP64
548.exchange2_r: -DSPEC_LP64
557.xz_r: -DSPEC_LP64

Base Optimization Flags

C benchmarks:

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

C++ benchmarks:

-m64 -std=c++14 -Wl,-mllvm -Wl,-align-all-nofallthru-blocks=6
-Wl,-mllvm -Wl,-reduce-array-computations=3
-Wl,-mllvm -Wl,-do-block-reorder=advanced -z muldefs -O3 -march=znver5
-fveclib=AMDLIBM -ffast-math -flto -mllvm -unroll-threshold=100
-mllvm -loop-unswitch-threshold=2000000
-mllvm -reduce-array-computations=3 -zopt -fno-PIE -no-pie
-fvirtual-function-elimination -fvisibility=hidden
-mllvm -do-block-reorder=advanced -lamdlibm -lflang -lamdalloc-ext
-ldl

Fortran benchmarks:

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



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Base Other Flags

C benchmarks:

-Wno-unused-command-line-argument

C++ benchmarks:

-Wno-unused-command-line-argument

Fortran benchmarks:

-Wno-unused-command-line-argument

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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