



# SPEC CPU®2017 Integer Rate Results

Copyright 2017-2023 Standard Performance Evaluation Corporation

**Hewlett Packard Enterprise**

(Test Sponsor: HPE)

ProLiant DL325 Gen11

(2.25 GHz, AMD EPYC 9754)

SPECrate®2017\_int\_base =

SPECrate®2017\_int\_peak =

CPU2017 License: 3

Test Sponsor: HPE

Tested by: HPE

Test Date: May-2023

Hardware Availability: Jun-2023

Software Availability: Nov-2022

**SPEC has determined that this result does not comply with the SPEC CPU 2017 rules and reporting rules. Specifically, the test sponsor notified SPEC that the results were measured on an unsupported configuration.**

Copies

500.perlbench\_r

502.gcc\_r

505.mcf\_r

520.omnetpp\_r

523.xalancbmk\_r

525.x264\_r

531.deepsjeng\_r

541.leela\_r

548.exchange2\_r

557.xz\_r

**Non-Compliant**

## Hardware

CPU Name: AMD EPYC 9754

Nominal: 2250

Enabled: 128 cores, 1 chip, 2 threads/core

Orderable: 1 chip

Cache L1: 32 KB I + 32 KB D on chip per core

L2: 1 MB I+D on chip per core

L3: 256 MB I+D on chip per chip,  
16 MB shared / 8 cores

Other: None

Memory: 768 GB (12 x 64 GB 2Rx4 PC5-4800B-R)

Storage: 1 x 960 GB SATA SSD

Other: None

## Software

OS:

Red Hat Enterprise Linux 9.0 (Plow)

Kernel 5.14.0-70.13.1.el9\_0.x86\_64

Compiler:

C/C++/Fortran: Version 4.0.0 of AOCC

Parallel:

No

Firmware:

HPE BIOS Version v1.30 03/06/2023 released  
Mar-2023

File System:

xfs

System State:

Run level 3 (multi-user)

Base Pointers:

64-bit

Peak Pointers:

32/64-bit

Other:

None

Power Management: BIOS and OS 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 | NC     | NC      | NC    | NC      | NC    | NC      | NC    | NC     | NC      | NC    | NC      | NC    | NC      | NC    |
| 502.gcc_r       | NC     | NC      | NC    | NC      | NC    | NC      | NC    | NC     | NC      | NC    | NC      | NC    | NC      | NC    |
| 505.mcf_r       | NC     | NC      | NC    | NC      | NC    | NC      | NC    | NC     | NC      | NC    | NC      | NC    | NC      | NC    |
| 520.omnetpp_r   | NC     | NC      | NC    | NC      | NC    | NC      | NC    | NC     | NC      | NC    | NC      | NC    | NC      | NC    |
| 523.xalancbmk_r | NC     | NC      | NC    | NC      | NC    | NC      | NC    | NC     | NC      | NC    | NC      | NC    | NC      | NC    |
| 525.x264_r      | NC     | NC      | NC    | NC      | NC    | NC      | NC    | NC     | NC      | NC    | NC      | NC    | NC      | NC    |
| 531.deepsjeng_r | NC     | NC      | NC    | NC      | NC    | NC      | NC    | NC     | NC      | NC    | NC      | NC    | NC      | NC    |
| 541.leela_r     | NC     | NC      | NC    | NC      | NC    | NC      | NC    | NC     | NC      | NC    | NC      | NC    | NC      | NC    |
| 548.exchange2_r | NC     | NC      | NC    | NC      | NC    | NC      | NC    | NC     | NC      | NC    | NC      | NC    | NC      | NC    |
| 557.xz_r        | NC     | NC      | NC    | NC      | NC    | NC      | NC    | NC     | NC      | NC    | NC      | NC    | NC      | NC    |

SPECrate®2017\_int\_base =

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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

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.

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## Operating System Notes (Continued)

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) only on request for base runs, 'echo madvise > /sys/kernel/mm/transparent\_hugepage/enabled' run as root.  
To enable THP for all allocations for peak runs, '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_19/amd_rate_aocc400_genoa_B_lib/lib:/home/cpu2017_19/amd_rate_aocc400_genoa_B_lib/lib32  
:"  
MALLOC_CONF = "retain:true"
```

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

```
MALLOC_CONF = "thp:never"
```

## 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

Workload Profile set to General Throughput Compute

Determinism Control set to Manual

Performance Determinism set to Power Deterministic

Last-Level Cache (LLC) as NUMA Node set to Enabled

NUMA memory domains per socket set to Four memory domains per socket

ACPI CST C2 Latency set to 18 microseconds

Thermal Configuration set to Maximum Cooling

Workload Profile set to Custom

Power Regulator set to OS Control Mode

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## Platform Notes (Continued)

```
Sysinfo program /home/cpu2017_19/bin/sysinfo
Rev: r6732 of 2022-11-07 fe91c89b7ed5c36ae2c92cc09774197
running on localhost.localdomain Sun May 21 11:54:18 2023
```

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 250 (250-6.e19\_0)
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

```
1. uname -a
Linux localhost.localdomain 5.14.0-70.13.1.el9_0.x86_64 #1 SMP PREEMPT Thu Apr 14 12:42:38 EDT 2022 x86_64
x86_64 x86_64 GNU/Linux
```

```
2. w
11:54:18 up 1 min, 1 user, load average: 0.26, 0.08, 0.02
USER      TTY      LOGIN@  IDLE   JCPU   PCPU WHAT
root     pts/0    11:53   17.00s  1.21s  0.06s /bin/bash ./amd_rate_aocc400_genoa_B1.sh
```

```
3. Username
From environment variable $USER: root
```

```
4. ulimit -a
```

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## Platform Notes (Continued)

```

real-time non-blocking time (microseconds, -R) unlimited
core file size (blocks, -c) 0
data seg size (kbytes, -d) unlimited
scheduling priority (-e) 0
file size (blocks, -f) unlimited
pending signals (-i) 3094553
max locked memory (kbytes, -l) 2097152
max memory size (kbytes, -m) unlimited
open files (-n) 1024
pipe size (512 bytes, -p) 8
POSIX message queues (bytes, -q) 81920
real-time priority (-r) 0
stack size (bytes, -s) unlimited
cpu time (seconds, -t) unlimited
max user processes (-u) 3094553
virtual memory (kbytes, -v) unlimited
file locks unlimited

```

### 5. sysinfo process ancestry

```

/usr/lib/systemd/systemd --switched-root --system --deserialize 27
sshd: /usr/sbin/sshd [priv] 0 of 10-100 startups
sshd: root [priv]
sshd: root@pts/0
-bash
python3 ./run_rate.py
/bin/bash ./amd_rate_aocc400_genoa_B1.sh
runcpu --config amd_rate_aocc400_genoa_B1.cfg --tune all --reportable --iterations 3 intrate
runcpu --configfile amd_rate_aocc400_genoa_B1.cfg --tune all --reportable --iterations 3 --nopower --runmode
rate --tune use:peak --size test:train:refrate intrate --nopreenv --note-preenv --logfile
$SPECComp/CPUBench/04/templogs/preenv.intrate.004.0.log --lognum 004.0 --from_runcpu 2
specperl $SPEC/bin/sysinfo
$SPEC = /home/cpu2017_19

```

### 6. /proc/cpuinfo

```

model name      : AMD EPYC 9754 128-Core Processor
vendor_id       : AuthenticAMD
cpu_family      : 25
model           : 160
stepping        : 2
bugs            : sysret_ss_attrs spectre_v1 spectre_v2 spec_store_bypass
TLB size       : 3584 4K pages
cpu cores       : 128
siblings        : 256
1 physical ids (chips)
256 processors (hardware threads)
physical id 0: core ids 0-127
physical id 0: apicids 0-255
Caution: /proc/cpuinfo data regarding chips, cores, and threads is not necessarily reliable, especially for
virtualized systems. Use the above data carefully.

```

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## Platform Notes (Continued)

### 7. lscpu

From lscpu from util-linux 2.37.4:

```

Architecture:          x86_64
CPU op-mode(s):        32-bit, 64-bit
Address sizes:         52 bits physical, 48 bits virtual
Byte Order:            Little Endian
CPU(s):                256
On-line CPU(s) list:   0-255
Vendor ID:             AuthenticAMD
BIOS Vendor ID:       Advanced Micro Devices, Inc.
Model name:            AMD EPYC 9754 128-Core Processor
BIOS Model name:      AMD EPYC 9754 128-Core Processor
CPU family:            25
Model:                 1
Thread(s) per core:   2
Core(s) per socket:   128
Socket(s):             1
Stepping:              2
Frequency boost:      enabled
CPU max MHz:          2250.0000
CPU min MHz:          1500.0000
BogoMIPS:              4493.67
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 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 svm 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
                        invpcid_single hw_pstate ssbd mba ibrs ibpb stibp vmmcall fsgsbase bmi1
                        avx2 smep bmi2 erms invpcid cqm rdt_a avx512f avx512dq rdseed adx smap
                        avx512ifma clflushopt clwb avx512cd sha_ni avx512bw avx512vl xsaveopt
                        xsaves xgetbv1 xsaves cqm_llc cqm_occup_llc cqm_mbm_total cqm_mbm_local
                        avx512_bf16 clzero irperf xsaveerptr rdpru wbnoinvd amd_ppin arat npt lbrv
                        svm_lock nrip_save tsc_scale vmcb_clean flushbyasid decodeassists
                        pausefilter pfthreshold avic v_vmsave_vmload vgif v_spec_ctrl avx512vbmi
                        umip pku ospke avx512_vbmi2 gfni vaes vpclmulqdq avx512_vnni avx512_bitalg
                        avx512_vpopcntdq la57 rdpid overflow_recov succor smca fsrm flush_lld
Virtualization:       AMD-V
L1d cache:            4 MiB (128 instances)
L1i cache:            4 MiB (128 instances)
L2 cache:             128 MiB (128 instances)
L3 cache:             256 MiB (16 instances)
NUMA node(s):         16
NUMA node0 CPU(s):   0-7,128-135
NUMA node1 CPU(s):   8-15,136-143
NUMA node2 CPU(s):   64-71,192-199
NUMA node3 CPU(s):   72-79,200-207

```

(Continued on next page)





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## Platform Notes (Continued)

```

NUMA node4 CPU(s):      32-39,160-167
NUMA node5 CPU(s):      40-47,168-175
NUMA node6 CPU(s):      96-103,224-231
NUMA node7 CPU(s):      104-111,232-239
NUMA node8 CPU(s):      48-55,176-183
NUMA node9 CPU(s):      56-63,184-191
NUMA node10 CPU(s):     112-119,240-247
NUMA node11 CPU(s):     120-127,248-255
NUMA node12 CPU(s):     128-135,144-151
NUMA node13 CPU(s):     24-31,152-159
NUMA node14 CPU(s):     80-87,208-215
NUMA node15 CPU(s):     88-95,216-223
Vulnerability Itlb multihit: Not affected
Vulnerability L1tf:      Not affected
Vulnerability Mds:       Not affected
Vulnerability Meltdown:  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; Retpolines, IBPB conditional, IBRS_FW, STIBP always-on, RSB
                          filling
Vulnerability Srbds:     Not affected
Vulnerability Tsx asnc abort: Not affected

```

From lscpu --cache:

| NAME | ONE-SIZE | ALL-SIZE | WAYS | TYPE        | LEVEL | SETS  | PHY-LINE | COHERENCY-SIZE |
|------|----------|----------|------|-------------|-------|-------|----------|----------------|
| L1d  | 32K      | 4M       | 8    | Data        | 1     | 64    | 1        | 64             |
| L1i  | 32K      | 4M       | 8    | Instruction | 1     | 64    | 1        | 64             |
| L2   | 1M       | 28M      | 8    | Unified     | 2     | 2048  | 1        | 64             |
| L3   | 16M      | 56M      | 16   | Unified     | 3     | 16384 | 1        | 64             |

8. numactl hardware

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

node0 cpus: 0-7,128-135

node0 size: 48134 MB

node0 free: 47839 MB

node1 cpus: 8-15,136-143

node1 size: 48380 MB

node1 free: 47852 MB

node2 cpus: 64-71,192-199

node2 size: 48380 MB

node2 free: 48088 MB

node3 cpus: 72-79,200-207

node3 size: 48344 MB

node3 free: 47481 MB

node4 cpus: 32-39,160-167

node4 size: 48380 MB

node4 free: 48082 MB

node5 cpus: 40-47,168-175

node5 size: 48380 MB

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## Platform Notes (Continued)

```

node 5 free: 48255 MB
node 6 cpus: 96-103,224-231
node 6 size: 48380 MB
node 6 free: 48221 MB
node 7 cpus: 104-111,232-239
node 7 size: 48380 MB
node 7 free: 48119 MB
node 8 cpus: 48-55,176-183
node 8 size: 48380 MB
node 8 free: 48246 MB
node 9 cpus: 56-63,184-191
node 9 size: 48380 MB
node 9 free: 48135 MB
node 10 cpus: 112-119,240-247
node 10 size: 48380 MB
node 10 free: 48232 MB
node 11 cpus: 120-127,248-255
node 11 size: 48380 MB
node 11 free: 48071 MB
node 12 cpus: 16-23,144-151
node 12 size: 48380 MB
node 12 free: 48121 MB
node 13 cpus: 24-31,152-159
node 13 size: 48380 MB
node 13 free: 48169 MB
node 14 cpus: 32-39,208-215
node 14 size: 48380 MB
node 14 free: 48106 MB
node 15 cpus: 88-95,216-223
node 15 size: 48318 MB
node 15 free: 48041 MB

```

```

node distances:
node 0: 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15
1: 11 10 11 11 12 12 12 12 12 12 12 12 12 12 12 12
2: 11 11 10 11 12 12 12 12 12 12 12 12 12 12 12 12
3: 11 11 11 10 12 12 12 12 12 12 12 12 12 12 12 12
4: 12 12 12 12 10 11 11 11 12 12 12 12 12 12 12 12
5: 12 12 12 12 11 10 11 11 12 12 12 12 12 12 12 12
6: 12 12 12 12 11 11 10 11 12 12 12 12 12 12 12 12
7: 12 12 12 12 11 11 11 10 12 12 12 12 12 12 12 12
8: 12 12 12 12 12 12 12 12 12 10 11 11 11 12 12 12
9: 12 12 12 12 12 12 12 12 12 11 10 11 11 12 12 12
10: 12 12 12 12 12 12 12 12 12 11 11 10 11 12 12 12
11: 12 12 12 12 12 12 12 12 12 11 11 10 12 12 12 12
12: 12 12 12 12 12 12 12 12 12 12 12 12 10 11 11 11
13: 12 12 12 12 12 12 12 12 12 12 12 12 11 10 11 11
14: 12 12 12 12 12 12 12 12 12 12 12 12 11 11 10 11
15: 12 12 12 12 12 12 12 12 12 12 12 12 11 11 11 10

```

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## Platform Notes (Continued)

9. /proc/meminfo  
MemTotal: 792312560 kB

10. who -r  
run-level 3 May 21 11:52

11. Systemd service manager version: systemd 250 (250-1.el9\_0)  
Default Target Status  
multi-user running

12. Services, from systemctl list-unit-files  
STATE UNIT FILES  
enabled NetworkManager NetworkManager-dispatcher NetworkManager-wait-online auditd crond  
dbus-broker firewalld firewalld@ irqbalance kdump lvm2-monitor mdmonitor microcode  
nis-domainname rshmcertd rsyslog selinux-autorelabel-mark sshd sssd  
systemd-networkd systemd-networkd-generator udisks2 upower  
systemd-remount-fs  
enabled-runtime blk-availability canberra-system-bootup canberra-system-shutdown  
disabled canberra-system-shutdown-reboot chrony-wait chronyd console-getty cpupower debug-shell  
hmc-dump-odata ipsec kvm\_stat man-db-restart-cache-update nftables rdisc rhsm  
virt-facts yumdb-rebuild serial-getty@ sshd-keygen@ systemd-boot-check-no-failures  
systemd-pstore systemd-sysexit  
indirect systemd-udevd sssd-kcm sssd-nss sssd-pac sssd-pam sssd-ssh sssd-sudo

13. Linux kernel boot-time arguments, from /proc/cmdline  
BOOT\_IMAGE=(vmlinuz) vmlinuz-5.14.0-70.13.1.el9\_0.x86\_64  
root=/dev/mapper/rhel-root  
ro  
resume=/dev/mapper/rhel-swap  
systemd-verity=0  
rd.lvm.lv=rhel/swap

14. cpupower frequency-info  
analyzing CPU 0:  
current policy: frequency should be within 1.50 GHz and 2.25 GHz.  
The governor "performance" may decide which speed to use  
within this range.  
boost state support:  
Supported: yes  
Active: yes  
Boost States: 0  
Total States: 3  
Pstate-P0: 2250MHz

15. systemctl

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## Platform Notes (Continued)

```

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 43200
vm.dirtytime_expire_seconds 500
vm.extfrag_threshold       1
vm.min_unmapped_ratio     0
vm.nr_hugepages            0
vm.nr_hugepages_mempolicy  0
vm.nr_overcommit_hugepages 0
vm.swappiness              1
vm.watermark_boost_factor  10
vm.watermark_scale_factor  10
vm.zone_reclaim_mode      1

```

```

16. /sys/kernel/mm/transparent_hugepage
defrag      [always] defrag+madvise madvise never
enabled     [always] madvise never
hpage_pmd_size 2097152
shmem_enabled [always] always w/in_size advise [never] deny force

```

```

17. /sys/kernel/mm/transparent_hugepage/khugepaged
alloc_sleep_millisecs 60000
defrag                 1
max_ptes_per_mlock    511
max_ptes_shrned       256
max_ptes_to_scan     64
pages_to_scan         4096
scan_sleep_millisecs  10000

```

```

18. OS release
From /etc/*-release /etc/*-version
os-release      Red Hat Enterprise Linux 9.0 (Plow)
redhat-release Red Hat Enterprise Linux release 9.0 (Plow)
system-release Red Hat Enterprise Linux release 9.0 (Plow)

```

```

19. Disk information
SPEC is set to: /home/cpu2017_19
Filesystem      Type  Size  Used Avail Use% Mounted on
/dev/mapper/rhel-home xfs  819G  44G  775G   6% /home

```

(Continued on next page)



# SPEC CPU®2017 Integer Rate Results

Copyright 2017-2023 Standard Performance Evaluation Corporation

**Hewlett Packard Enterprise**

(Test Sponsor: HPE)

ProLiant DL325 Gen11

(2.25 GHz, AMD EPYC 9754)

SPECrate®2017\_int\_base =

SPECrate®2017\_int\_peak =

CPU2017 License: 3

Test Sponsor: HPE

Tested by: HPE

Test Date: May-2023

Hardware Availability: Jun-2023

Software Availability: Nov-2022

**SPEC has determined that this result does not comply with the SPEC CPU 2017 rules and reporting rules. Specifically, the test sponsor notified SPEC that the results were measured on an unsupported configuration.**

## Platform Notes (Continued)

```
20. /sys/devices/virtual/dmi/id
Vendor: HPE
Product: ProLiant DL325 Gen11
Product Family: ProLiant
Serial: DL325G11-010
```

```
21. dmidecode
Additional information from dmidecode 3.3 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 Hynix HMC94AEBRA103N 64GB 2 rank 4800
2x Hynix HMC94MEBRA121N 64GB 2 rank 4800
```

```
22. BIOS
(This section combines info from /sys/devices and dmidecode.)
BIOS Vendor: HPE
BIOS Version: 1.30
BIOS Date: 03/06/2023
BIOS Revision: 1.30
Firmware Revision: 1.30
```

## Compiler Version Notes

```
====
C | 502.gcc_r(peak)
====
clang version 14.0.6 (CLANG: AOCC_4.0.0-Build#389 2022_10_07) (based on LLVM Mirror.Version.14.0.6)
Target: x86_64-unknown-linux-gnu
Thread model: posix
InstalledDir: /opt/AMD/aocc/aocc-compiler-rel-4.0-3206-389/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 14.0.6 (CLANG: AOCC_4.0.0-Build#389 2022_10_07) (based on LLVM Mirror.Version.14.0.6)
Target: x86_64-unknown-linux-gnu
Thread model: posix
InstalledDir: /opt/AMD/aocc/aocc-compiler-rel-4.0-3206-389/bin
====
```

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

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(Test Sponsor: HPE)

ProLiant DL325 Gen11

(2.25 GHz, AMD EPYC 9754)

SPECrate®2017\_int\_base =

SPECrate®2017\_int\_peak =

CPU2017 License: 3

Test Sponsor: HPE

Tested by: HPE

Test Date: May-2023

Hardware Availability: Jun-2023

Software Availability: Nov-2022

**SPEC has determined that this result does not comply with the SPEC CPU 2017 run and reporting rules. Specifically, the test sponsor notified SPEC that the results were measured on an unsupported configuration.**

## Compiler Version Notes (Continued)

AMD clang version 14.0.6 (CLANG: AOCC\_4.0.0-Build#389 2022\_10\_07) (based on LLVM Mirror.Version.14.0.6)  
Target: i386-unknown-linux-gnu  
Thread model: posix  
InstalledDir: /opt/AMD/aocc/aocc-compiler-rel-4.0-3206-389/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 14.0.6 (CLANG: AOCC\_4.0.0-Build#389 2022\_10\_07) (based on LLVM Mirror.Version.14.0.6)  
Target: x86\_64-unknown-linux-gnu  
Thread model: posix  
InstalledDir: /opt/AMD/aocc/aocc-compiler-rel-4.0-3206-389/bin

C++ | 523.xalancbmk\_r(peak)

AMD clang version 14.0.6 (CLANG: AOCC\_4.0.0-Build#389 2022\_10\_07) (based on LLVM Mirror.Version.14.0.6)  
Target: i386-unknown-linux-gnu  
Thread model: posix  
InstalledDir: /opt/AMD/aocc/aocc-compiler-rel-4.0-3206-389/bin

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

AMD clang version 14.0.6 (CLANG: AOCC\_4.0.0-Build#389 2022\_10\_07) (based on LLVM Mirror.Version.14.0.6)  
Target: x86\_64-unknown-linux-gnu  
Thread model: posix  
InstalledDir: /opt/AMD/aocc/aocc-compiler-rel-4.0-3206-389/bin

C++ | 523.xalancbmk\_r(peak)

AMD clang version 14.0.6 (CLANG: AOCC\_4.0.0-Build#389 2022\_10\_07) (based on LLVM Mirror.Version.14.0.6)  
Target: i386-unknown-linux-gnu  
Thread model: posix  
InstalledDir: /opt/AMD/aocc/aocc-compiler-rel-4.0-3206-389/bin

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

AMD clang version 14.0.6 (CLANG: AOCC\_4.0.0-Build#389 2022\_10\_07) (based on LLVM Mirror.Version.14.0.6)  
Target: x86\_64-unknown-linux-gnu  
Thread model: posix

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# SPEC CPU®2017 Integer Rate Results

Copyright 2017-2023 Standard Performance Evaluation Corporation

Hewlett Packard Enterprise

(Test Sponsor: HPE)

ProLiant DL325 Gen11

(2.25 GHz, AMD EPYC 9754)

SPECrate®2017\_int\_base =

SPECrate®2017\_int\_peak =

CPU2017 License: 3

Test Sponsor: HPE

Tested by: HPE

Test Date: May-2023

Hardware Availability: Jun-2023

Software Availability: Nov-2022

**SPEC has determined that this result does not comply with the SPEC CPU 2017 rules and reporting rules. Specifically, the test sponsor notified SPEC that the results were measured on an unsupported configuration.**

## Compiler Version Notes (Continued)

InstalledDir: /opt/AMD/aocc/aocc-compiler-rel-4.0-3206-389/bin

Fortran | 548.exchange2\_r(base, peak)

AMD clang version 14.0.6 (CLANG: AOCC\_4.0.0-Build#389-2022\_10\_07) (based on LLVM Mirror.Version.14.0.6)

Target: x86\_64-unknown-linux-gnu

Thread model: posix

InstalledDir: /opt/AMD/aocc/aocc-compiler-rel-4.0-3206-389/bin

## Base Compiler Invocation

C benchmarks:

clang

C++ benchmarks:

clang++

Fortran benchmarks:

flang

## Base Portability Flags

501.x264\_r: -DSPEC\_LINUX\_X64 -DSPEC\_LP64

502.gcc\_r: -DSPEC\_LP64

505.mcf\_r: -DSPEC\_LP64

520.omniscpp\_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



# SPEC CPU®2017 Integer Rate Results

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ProLiant DL325 Gen11

(2.25 GHz, AMD EPYC 9754)

SPECrate®2017\_int\_base =

SPECrate®2017\_int\_peak =

CPU2017 License: 3

Test Sponsor: HPE

Tested by: HPE

Test Date: May-2023

Hardware Availability: Jun-2023

Software Availability: Nov-2022

**SPEC has determined that this result does not comply with the SPEC CPU 2017 rules and reporting rules. Specifically, the test sponsor notified SPEC that the results were measured on an unsupported configuration.**

## Base Optimization Flags

C benchmarks:

```
-m64 -flto -Wl,-mllvm -Wl,-align-all-nofallthru-blocks=6
-Wl,-mllvm -Wl,-reduce-array-computations=3
-Wl,-mllvm -Wl,-ldist-scalar-expand -fenable-aggressive-gather
-z muldefs -O3 -march=znver4 -fveclib=AMDLIBM -ffast-math
-fstruct-layout=7 -mllvm -unroll-threshold=5
-mllvm -inline-threshold=1000 -fremap-arrays -fstrip-mining
-mllvm -reduce-array-computations=3 -zopt -lamdlibm -lflang
-lamdalloc
```

C++ benchmarks:

```
-m64 -flto -Wl,-mllvm -Wl,-align-all-nofallthru-blocks=6
-Wl,-mllvm -Wl,-reduce-array-computations=3 -z muldefs -O3
-march=znver4 -fveclib=AMDLIBM -ffast-math
-mllvm -unroll-threshold=1000 -finline-aggressive
-mllvm -loop-unswitch-threshold=200000
-mllvm -reduce-array-computations=3 -zopt
-fvirtual-function-elimination -fvisibility=hidden -lamdlibm -lflang
-lamdalloc-ext
```

Fortran benchmarks:

```
-m64 -flto -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=znver4
-fveclib=AMDLIBM -ffast-math -fepilog-vectorization-of-inductions
-mllvm -optimize-strided-mem-cost -floop-transform
-mllvm -unroll-aggressive -mllvm -unroll-threshold=500 -lamdlibm
-lflang -lamdalloc
```

## Base Other Flags

C benchmarks:

-Wno-unused-command-line-argument

C++ benchmarks:

-Wno-unused-command-line-argument

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# SPEC CPU®2017 Integer Rate Results

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(2.25 GHz, AMD EPYC 9754)

SPECrate®2017\_int\_base =

SPECrate®2017\_int\_peak =

CPU2017 License: 3

Test Sponsor: HPE

Tested by: HPE

Test Date: May-2023

Hardware Availability: Jun-2023

Software Availability: Nov-2022

**SPEC has determined that this result does not comply with the SPEC CPU 2017 rules and reporting rules. Specifically, the test sponsor notified SPEC that the results were measured on an unsupported configuration.**

## Base Other Flags (Continued)

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: -DSPEC\_FILE\_OFFSET\_BITS=64

505.mcf\_r: -DSPEC\_LP64

508.shootout\_r: -DSPEC\_LP64

523.xalancbmk\_r: -DSPEC\_LINUX -DSPEC\_LP64

525.x264\_r: -DSPEC\_LP64

531.deepcopy\_r: -DSPEC\_LP64

541.leela\_r: -DSPEC\_LP64

548.exchange2\_r: -DSPEC\_LP64

557.xz\_r: -DSPEC\_LP64





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SPECrate®2017\_int\_peak =

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Test Sponsor: HPE

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## Peak Optimization Flags

C benchmarks:

500.perlbench\_r: basepeak = yes

502.gcc\_r: -m32 -flto -z muldefs -Ofast -march=znver4  
-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 -flto -fno-mllvm -Wl,-align-all-nofallthru-blocks=6  
-Wl,-mllvm -Wl,-reduce-array-computations=3 -Ofast  
-march=znver4 -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 -lamdlibm  
-lflang -lamdalloc

C++ benchmarks:

500.omnetpp\_r: basepeak = yes

523.xalanrncbmk\_r: -m32 -flto -Wl,-mllvm -Wl,-align-all-nofallthru-blocks=6  
-Wl,-mllvm -Wl,-reduce-array-computations=3  
-Wl,-mllvm -Wl,-do-block-reorder=aggressive  
-fno-loop-reroll -Ofast -march=znver4 -fveclib=AMDLIBM  
-ffast-math -finline-aggressive  
-mllvm -unroll-threshold=100  
-mllvm -reduce-array-computations=3 -zopt  
-mllvm -do-block-reorder=aggressive  
-fvirtual-function-elimination -fvirtual-function-visibility=hidden  
-lamdalloc-ext

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# SPEC CPU®2017 Integer Rate Results

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ProLiant DL325 Gen11

(2.25 GHz, AMD EPYC 9754)

SPECrate®2017\_int\_base =

SPECrate®2017\_int\_peak =

CPU2017 License: 3

Test Sponsor: HPE

Tested by: HPE

Test Date: May-2023

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Software Availability: Nov-2022

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## Peak Optimization Flags (Continued)

```
531.deepsjeng_r: -m64 -flto -Wl,-mllvm -Wl,-align-all-nofallthru-blocks=6
-Wl,-mllvm -Wl,-reduce-array-computations=3 -O3
-march=znver4 -fveclib=AMDLIBM -ffast-math
-mllvm -unroll-threshold=100 -finline-functions-peek-into-branches
-mllvm -loop-unswitch-threshold=200000
-mllvm -reduce-array-computations=3 -zopt
-fvirtual-function-elimination -fvisibility=hidden
-lamdlibm -lamdalloc-ext
```

541.leela\_r: basepeak = yes

Fortran benchmarks:

```
-m64 -flto -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=znver4 -fveclib=AMDLIBM
-ffast-math -fepilog-vectorization-of-inductions
-mllvm -optimize-bridged-cm-cost -floop-transform
-mllvm -unroll-aggressive -mllvm -unroll-threshold=500 -lamdlibm
-lflang -lamdalloc-ext
```

## Peak Other Flags

(except as noted below):

-Wno-unused-command-line-argument

502.gcc\_r: -L/usr/lib32 -Wno-unused-command-line-argument

-L/home/work/cpu2017/v118/aocc4/b1/rate/amd\_rate\_aocc400\_genoa\_B\_lib/lib32

C++ benchmarks (except as noted below):

-Wno-unused-command-line-argument

523.xalancbmk\_r: -L/usr/lib32 -Wno-unused-command-line-argument

-L/home/work/cpu2017/v118/aocc4/b1/rate/amd\_rate\_aocc400\_genoa\_B\_lib/lib32

Fortran benchmarks:

-Wno-unused-command-line-argument



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

<http://www.spec.org/cpu2017/flags/HPE-Platform-Flags-AMD-Burhamo-rev1.0.html>

<http://www.spec.org/cpu2017/flags/aocc400-flags.html>

You can also download the XML flag sources by using the following links:

<http://www.spec.org/cpu2017/flags/HPE-Platform-Flags-AMD-Burhamo-rev1.0.xml>

<http://www.spec.org/cpu2017/flags/aocc400-flags.xml>

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