# SPEC CPU®2017 Integer Rate Result



## Hewlett Packard Enterprise

(Test Sponsor: HPE)

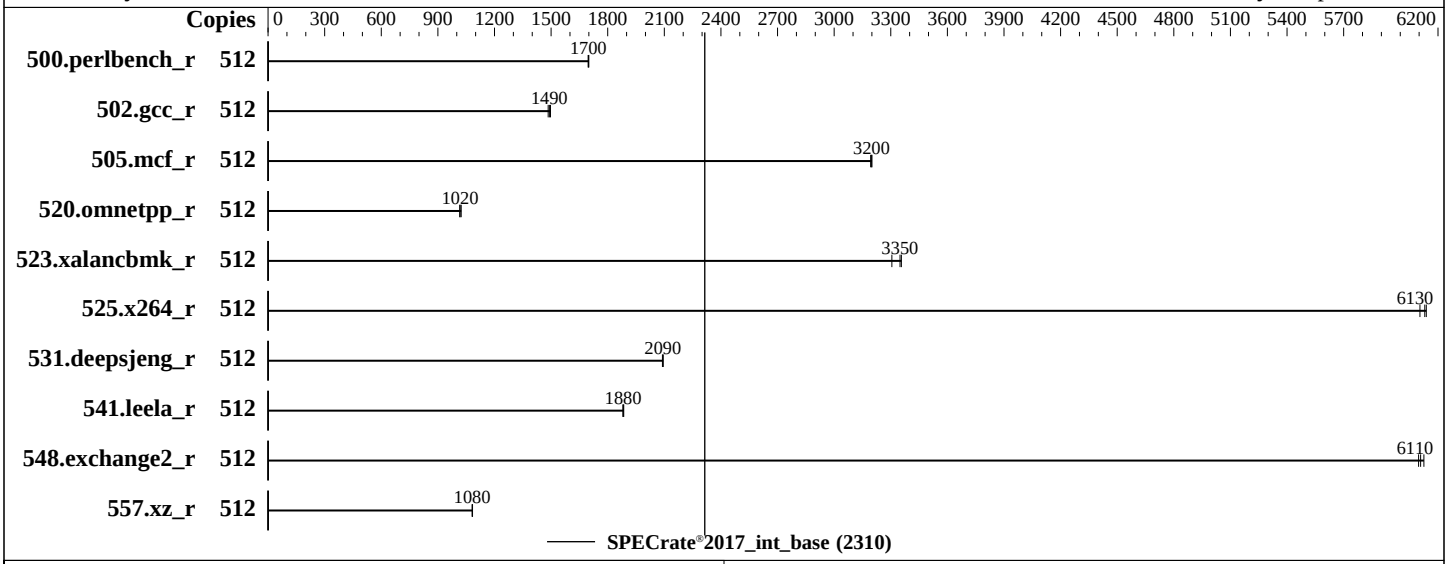
HPE Cray XD225v Gen11
(2.40 GHz, AMD EPYC 9745)

SPECrate®2017_int_base = 2310

SPECrate®2017_int_peak = Not Run

**CPU2017 License:** 3
**Test Sponsor:** HPE
**Tested by:** HPE

**Test Date:** Jul-2025
**Hardware Availability:** Mar-2025
**Software Availability:** Apr-2025




## Hardware

| | |
|---|---|
| CPU Name: | AMD EPYC 9745 |
| Max MHz: | 3700 |
| Nominal: | 2400 |
| Enabled: | 256 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: | 256 MB I+D on chip per chip, 32 MB shared / 16 cores |
| Other: | None |
| Memory: | 1536 GB (24 x 64 GB 2Rx4 PC5-6400B-R) |
| Storage: | 1 x 222 GB NVME SSD |
| Other: | CPU Cooling: DLC |

## Software

| | |
|---|---|
| OS: | Red Hat Enterprise Linux release 9.4 (Plow) kernel version 5.14.0-427.13.1.el9.x86_64 |
| Compiler: | C/C++/Fortran: Version 5.0.0 of AOCC |
| Parallel: | No |
| Firmware: | Version CA2K_5.35_v5.40 released Mar-2025 |
| File System: | xfs |
| System State: | Run level 3 (multi-user) |
| Base Pointers: | 64-bit |
| Peak Pointers: | Not Applicable |
| 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 | 512 | 480 | 1700 | 480 | 1700 | **480** | **1700** | | | | | | | |
| 502.gcc_r | 512 | 484 | 1500 | 488 | 1480 | **486** | **1490** | | | | | | | |
| 505.mcf_r | 512 | 259 | 3200 | 259 | 3190 | **259** | **3200** | | | | | | | |
| 520.omnetpp_r | 512 | 661 | 1020 | 656 | 1020 | **660** | **1020** | | | | | | | |
| 523.xalancbmk_r | 512 | 164 | 3310 | 161 | 3360 | **161** | **3350** | | | | | | | |
| 525.x264_r | 512 | 147 | 6100 | 146 | 6140 | **146** | **6130** | | | | | | | |
| 531.deepsjeng_r | 512 | 280 | 2090 | **280** | **2090** | 281 | 2090 | | | | | | | |
| 541.leela_r | 512 | 451 | 1880 | **450** | **1880** | 450 | 1880 | | | | | | | |
| 548.exchange2_r | 512 | 220 | 6100 | **220** | **6110** | 219 | 6130 | | | | | | | |
| 557.xz_r | 512 | 510 | 1080 | **511** | **1080** | 511 | 1080 | | | | | | | |

**SPECrate®2017_int_base = 2310**

**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) 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 =
     "/tmp/cpu2017-1.1.9/amd_rate_aocc500_znver5_A_lib/lib:/tmp/cpu2017-1.1.9/amd_rate_aocc500_znver5_A_lib
     /lib32:/home/users/jsouthern/lib:/opt/cray/pe/papi/7.2.0.1/lib64"
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
 Determinism Control set to Manual
 Determinism Enable set to Power
 NUMA nodes per socket set to NPS4

 Sysinfo program /tmp/cpu2017-1.1.9/bin/sysinfo
 Rev: r6732 of 2022-11-07 fe91c89b7ed5c36ae2c92cc097bec197
 running on cn63 Tue Jul  1 11:57:20 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 252 (252-32.el9_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
 18. /sys/kernel/mm/transparent_hugepage/khugepaged
 19. OS release
 20. Disk information
 21. /sys/devices/virtual/dmi/id
 22. dmidecode warning
 23. BIOS
```

**(Continued on next page)**

## Platform Notes (Continued)

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

------------------------------------------------------------
1. uname -a
  Linux cn63 5.14.0-427.13.1.el9.x86_64 #1 SMP PREEMPT_DYNAMIC Mon Dec 2 16:59:18 CST 2024 x86_64 x86_64
  x86_64 GNU/Linux

------------------------------------------------------------
2. w
   11:57:21 up 37 min,  0 users,  load average: 0.44, 0.20, 0.27
  USER     TTY        LOGIN@   IDLE   JCPU   PCPU WHAT

------------------------------------------------------------
3. Username
  From environment variable $USER:  jsouthern

------------------------------------------------------------
4. ulimit -a
  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) 6188294
  max locked memory           (kbytes, -l) 2097152
  max memory size             (kbytes, -m) unlimited
  open files                          (-n) 16384
  pipe size                (512 bytes, -p) 8
  POSIX message queues         (bytes, -q) 819200
  real-time priority                  (-r) 0
  stack size                  (kbytes, -s) unlimited
  cpu time                   (seconds, -t) unlimited
  max user processes                  (-u) 6188294
  virtual memory              (kbytes, -v) unlimited
  file locks                          (-x) unlimited

------------------------------------------------------------
5. sysinfo process ancestry
 /sbin/init
 /opt/pbs/sbin/pbs_mom
 -bash
 /bin/bash /var/spool/pbs/mom_priv/jobs/11558[2].janus2-login.SC
 python3 ./run_amd_rate_aocc500_znver5_A1.py -b specrate -s refrate -i 3 -thp always -rc 512 --reportable
 /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/CPU2017.001/templogs/preenv.intrate.001.0.log --lognum 001.0 --from_runcpu 2
 specperl $SPEC/bin/sysinfo
$SPEC = /tmp/cpu2017-1.1.9

------------------------------------------------------------
6. /proc/cpuinfo
    model name      : AMD EPYC 9745 128-Core Processor
    vendor_id       : AuthenticAMD
    cpu family      : 26
    model           : 17
    stepping        : 0
    microcode       : 0xb101047
    bugs            : sysret_ss_attrs spectre_v1 spectre_v2 spec_store_bypass
```

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## Platform Notes (Continued)

```
     TLB size        : 192 4K pages
     cpu cores       : 128
     siblings        : 256
     2 physical ids (chips)
     512 processors (hardware threads)
     physical id 0: core ids 0-127
     physical id 1: core ids 0-127
     physical id 0: apicids 0-255
     physical id 1: apicids 256-511
   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 2.37.4:
   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):                               512
   On-line CPU(s) list:                  0-511
   Vendor ID:                            AuthenticAMD
   Model name:                           AMD EPYC 9745 128-Core Processor
   CPU family:                           26
   Model:                                17
   Thread(s) per core:                   2
   Core(s) per socket:                   128
   Socket(s):                            2
   Stepping:                             0
   Frequency boost:                      enabled
   CPU(s) scaling MHz:                   65%
   CPU max MHz:                          3707.8120
   CPU min MHz:                          1500.0000
   BogoMIPS:                             4792.69
   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 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 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
                                         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 vnmi avx512vbmi umip pku ospke avx512_vbmi2 gfni vaes
                                         vpclmulqdq avx512_vnni avx512_bitalg avx512_vpopcntdq la57 rdpid
                                         bus_lock_detect movdiri movdir64b overflow_recov succor smca fsrm
                                         avx512_vp2intersect flush_l1d debug_swap
   Virtualization:                       AMD-V
   L1d cache:                            12 MiB (256 instances)
   L1i cache:                            8 MiB (256 instances)
   L2 cache:                             256 MiB (256 instances)
   L3 cache:                             512 MiB (16 instances)
   NUMA node(s):                         8
```

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## Platform Notes (Continued)

```
  NUMA node0 CPU(s):                    0-31,256-287
  NUMA node1 CPU(s):                    32-63,288-319
  NUMA node2 CPU(s):                    64-95,320-351
  NUMA node3 CPU(s):                    96-127,352-383
  NUMA node4 CPU(s):                    128-159,384-415
  NUMA node5 CPU(s):                    160-191,416-447
  NUMA node6 CPU(s):                    192-223,448-479
  NUMA node7 CPU(s):                    224-255,480-511
  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 Retbleed:               Not affected
  Vulnerability Spec rstack overflow: Not affected
  Vulnerability Spec store bypass:      Mitigation; Speculative Store Bypass disabled via prctl
  Vulnerability Spectre v1:             Mitigation; usercopy/swapgs barriers and __user pointer sanitization
  Vulnerability Spectre v2:             Mitigation; Enhanced / Automatic IBRS, IBPB conditional, STIBP
                                        always-on, RSB filling, PBRSB-eIBRS 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      12M   12 Data            1    64        1             64
     L1i       32K       8M    8 Instruction     1    64        1             64
     L2         1M     256M   16 Unified         2  1024        1             64
     L3        32M     512M   16 Unified         3 32768        1             64

------------------------------------------------------------
8. numactl --hardware
NOTE: a numactl 'node' might or might not correspond to a physical chip.
  available: 8 nodes (0-7)
  node 0 cpus: 0-31,256-287
  node 0 size: 192627 MB
  node 0 free: 191377 MB
  node 1 cpus: 32-63,288-319
  node 1 size: 193478 MB
  node 1 free: 191927 MB
  node 2 cpus: 64-95,320-351
  node 2 size: 193519 MB
  node 2 free: 192330 MB
  node 3 cpus: 96-127,352-383
  node 3 size: 193519 MB
  node 3 free: 192290 MB
  node 4 cpus: 128-159,384-415
  node 4 size: 193519 MB
  node 4 free: 187764 MB
  node 5 cpus: 160-191,416-447
  node 5 size: 193519 MB
  node 5 free: 192338 MB
  node 6 cpus: 192-223,448-479
  node 6 size: 193519 MB
  node 6 free: 192234 MB
  node 7 cpus: 224-255,480-511
  node 7 size: 193415 MB
  node 7 free: 191644 MB
  node distances:
  node   0   1   2   3   4   5   6   7
```

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## Platform Notes (Continued)

```
     0:  10  12  12  12  32  32  32  32
     1:  12  10  12  12  32  32  32  32
     2:  12  12  10  12  32  32  32  32
     3:  12  12  12  10  32  32  32  32
     4:  32  32  32  32  10  12  12  12
     5:  32  32  32  32  12  10  12  12
     6:  32  32  32  32  12  12  10  12
     7:  32  32  32  32  12  12  12  10

------------------------------------------------------------
9. /proc/meminfo
   MemTotal:       1584252620 kB

------------------------------------------------------------
10. who -r
  run-level 3 Jul 1 11:22

------------------------------------------------------------
11. Systemd service manager version: systemd 252 (252-32.el9_4)
  Default Target  Status
  multi-user      degraded

------------------------------------------------------------
12. Failed units, from systemctl list-units --state=failed
    UNIT                              LOAD   ACTIVE SUB    DESCRIPTION
  * NetworkManager-wait-online.service loaded failed failed Network Manager Wait Online
  * rc-local.service                   loaded failed failed /etc/rc.d/rc.local Compatibility

------------------------------------------------------------
13. Services, from systemctl list-unit-files
  STATE            UNIT FILES
  enabled          NetworkManager NetworkManager-dispatcher NetworkManager-wait-online after-local array
                   atomd auditd chronyd cm-configuration cm-slingshot-ama cm-slingshot-bonding
                   cm-slingshot-ifroute cm_cpe cpuset_cpunodemap cpuset_memory_spread crond dbus-broker
                   getty@ irqbalance kdump lldpad low-memory-monitor mdmonitor microcode nis-domainname
                   oddjobd openibd palsd pbs pe postfix procset rpcbind rsyslog rtkit-daemon
                   selinux-autorelabel-mark smartd sshd sssd systemd-boot-update systemd-network-generator
                   tempohb-client upower
  enabled-runtime  rc-local rpc-statd systemd-fsck-root systemd-remount-fs
  disabled         arp-ethers canberra-system-bootup canberra-system-shutdown canberra-system-shutdown-reboot
                   chrony-wait chronyd-restricted clmgr-health-boot cm-slingshot-ama@ collectl console-getty
                   cpupower debug-shell dnf-system-upgrade filebeat firewalld gssproxy hpcm-ldms-lead ibacm
                   kvm_stat lnet man-db-restart-cache-update munge named nfs-blkmap nfs-server nftables
                   opensmd opensmd@ pbs@ rdisc rpmdb-rebuild selinux-check-proper-disable sshd-keygen@
                   sysstat systemd-boot-check-no-failures systemd-pstore systemd-sysext
  indirect         serial-getty@ sssd-autofs sssd-kcm sssd-nss sssd-pac sssd-pam sssd-ssh sssd-sudo
                   systemd-sysupdate systemd-sysupdate-reboot
  masked           plymouth-start

------------------------------------------------------------
14. Linux kernel boot-time arguments, from /proc/cmdline
  vmlinuz-5.14.0-427.13.1.el9.x86_64
  initrd=initramfs-5.14.0-427.13.1.el9.x86_64.img
  ROOTFS=disk
  IMAGE_PENDING=0
  IMAGE=rhel94-amd-turin-hpe-gbc-pe-25.3.3
  SLOT=3
  console=ttyS0,115200n8
  NODETYPE=service
  NODE_ID=service3101220003
```

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## Platform Notes (Continued)

```
  HOSTNAME=cn63
  SLOTCOUNT=4
  MONITOR_CONSOLE=yes
  ro
  root=dhcp
  selinux=0
  biosdevname=0
  numa_balancing=disable
  net.naming-scheme=v239
  systemd.unified_cgroup_hierarchy=0
  TRANSPORT=rsync
  IMAGESERVER=172.23.0.1
  TTL=2
  MCAST_RDV_ADDR=239.255.255.1
  FLAMETHROWER_DIRECTORY_PORTBASE=9000
  START_TIMEOUT=0
  RECEIVE_TIMEOUT=15
  crashkernel=410M
  net.ifnames=1
  MGMT_BONDING_TYPE=active-backup
  RW_SPARSE_PERHOST_SIZE=500M
  MAC=b4:7a:f1:b4:38:24

------------------------------------------------------------
15. cpupower frequency-info
  analyzing CPU 394:
    current policy: frequency should be within 2.40 GHz and 2.40 GHz.
                    The governor "performance" may decide which speed to use
                    within this range.
    boost state support:
      Supported: yes
      Active: no

------------------------------------------------------------
16. sysctl
  kernel.numa_balancing               0
  kernel.randomize_va_space           2
  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                     20
  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                      60
  vm.watermark_boost_factor       15000
  vm.watermark_scale_factor          10
  vm.zone_reclaim_mode                3

------------------------------------------------------------
17. /sys/kernel/mm/transparent_hugepage
  defrag          always defer defer+madvise [madvise] never
  enabled         [always] madvise never
  hpage_pmd_size  2097152
```

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## Platform Notes (Continued)

```
  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               Red Hat Enterprise Linux 9.4 (Plow)
  hpe-mpi-release          HPE MPI 1.9.7, Build 731.0940.250418T1930.r.rhel94hpe
  redhat-release           Red Hat Enterprise Linux release 9.4 (Plow)
  sgi-service-node-release Cluster Manager Service Node 1.12, Build
  730.0940.240930T1930.r.rhel94hpe-240930T1930
  system-release           Red Hat Enterprise Linux release 9.4 (Plow)

------------------------------------------------------------
20. Disk information
SPEC is set to: /tmp/cpu2017-1.1.9
  Filesystem      Type  Size  Used Avail Use% Mounted on
  /dev/nvme0n1p33 xfs   222G   14G  209G   7% /

------------------------------------------------------------
21. /sys/devices/virtual/dmi/id
    Vendor:         HPE
    Product:        HPE Cray XD225v
    Product Family: Cray

------------------------------------------------------------
22. dmidecode warning
  Cannot run dmidecode; consider saying (as root)
   chmod +s /usr/sbin/dmidecode


------------------------------------------------------------
23. BIOS
(This section combines info from /sys/devices and dmidecode.)
   BIOS Vendor:       American Megatrends International, LLC.
   BIOS Version:      CA2K_5.35_v5.40
   BIOS Date:         03/20/2025
```

## 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
--------------------------------------------------------------------------------------------------------------

==============================================================================================================
```

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## Compiler Version Notes (Continued)

```
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

**(Continued on next page)**

## Base Optimization Flags (Continued)

C benchmarks (continued):
-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-XD225v-AMD-Turin-rev1.2.html
http://www.spec.org/cpu2017/flags/aocc500-flags.2024-10-10.html

You can also download the XML flags sources by saving the following links:
http://www.spec.org/cpu2017/flags/HPE-Platform-Flags-XD225v-AMD-Turin-rev1.2.xml
http://www.spec.org/cpu2017/flags/aocc500-flags.2024-10-10.xml



For questions about this result, please contact the tester. For other inquiries, please contact info@spec.org.

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