# SPEC CPU®2017 Integer Rate Result

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## New H3C Technologies Co., Ltd.

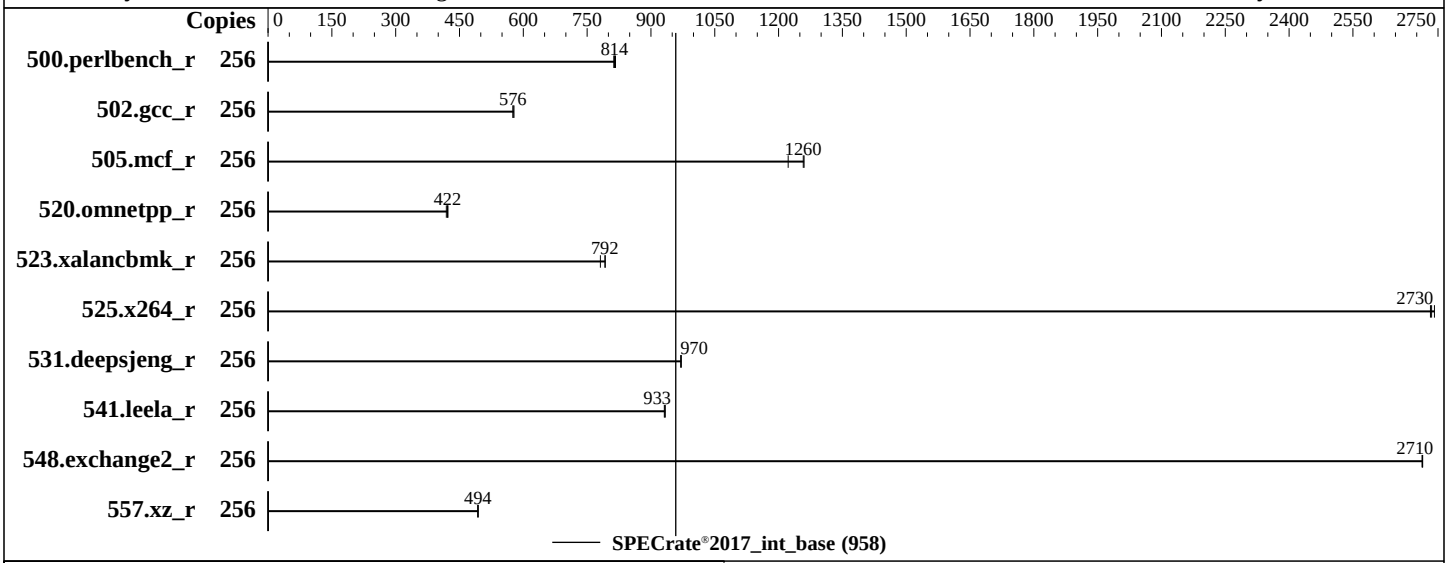
## H3C UniServer R3950 G6 (AMD EPYC 9754)

SPECrate®2017_int_base = 958

SPECrate®2017_int_peak = Not Run

**CPU2017 License:** 9066
**Test Sponsor:** New H3C Technologies Co., Ltd.
**Tested by:** New H3C Technologies Co., Ltd.

**Test Date:** May-2024
**Hardware Availability:** Mar-2024
**Software Availability:** Nov-2023




## Hardware

| | |
|---|---|
| CPU Name: | AMD EPYC 9754 |
| Max MHz: | 3100 |
| 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 960GB SSD |
| Other: | CPU Cooling: Air |

## Software

| | |
|---|---|
| OS: | Red Hat Enterprise Linux release 9.3 (Plow) kernel version 5.14.0-362.8.1.el9_3.x86_64 |
| Compiler: | C/C++/Fortran: Version 4.0.0 of AOCC |
| Parallel: | No |
| Firmware: | Version 6.30.28P91 released Mar-2024 |
| 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 | 256 | 501 | 813 | 499 | 817 | **501** | **814** | | | | | | | |
| 502.gcc_r | 256 | 627 | 578 | **629** | **576** | 630 | 576 | | | | | | | |
| 505.mcf_r | 256 | 338 | 1220 | 328 | 1260 | **329** | **1260** | | | | | | | |
| 520.omnetpp_r | 256 | 794 | 423 | 802 | 419 | **796** | **422** | | | | | | | |
| 523.xalancbmk_r | 256 | **341** | **792** | 346 | 781 | 341 | 793 | | | | | | | |
| 525.x264_r | 256 | 164 | 2730 | 164 | 2740 | **164** | **2730** | | | | | | | |
| 531.deepsjeng_r | 256 | 302 | 970 | **302** | **970** | 302 | 971 | | | | | | | |
| 541.leela_r | 256 | 454 | 933 | **454** | **933** | 455 | 931 | | | | | | | |
| 548.exchange2_r | 256 | **247** | **2710** | 247 | 2710 | 247 | 2710 | | | | | | | |
| 557.xz_r | 256 | 560 | 494 | 561 | 493 | **560** | **494** | | | | | | | |

SPECrate®2017_int_base = **958**

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 =
     "/home/cpu119/amd_rate_aocc400_znver4_A_lib/lib:/home/cpu119/amd_rate_aocc400_znver4_A_lib/lib32:/usr/
     local/amd/aocc-compiler-4.2.0/lib:/usr/local/amd/aocc-compiler-4.2.0/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 settings:
cTDP Control: Manual
cTDP: 400
PPT Control: Manual
PPT: 400
Determinism Slider set to Power
NUMA nodes per socket: NPS4
IOMMU: Auto
SVM Mode:Disable

 Sysinfo program /home/cpu119/bin/sysinfo
 Rev: r6732 of 2022-11-07 fe91c89b7ed5c36ae2c92cc097bec197
 running on localhost.localdomain Mon Aug 21 21:19:15 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 252 (252-18.el9)
 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. tuned-adm active
 17. sysctl
 18. /sys/kernel/mm/transparent_hugepage
```

**(Continued on next page)**

## Platform Notes (Continued)

```
19. /sys/kernel/mm/transparent_hugepage/khugepaged
20. OS release
21. Disk information
22. /sys/devices/virtual/dmi/id
23. dmidecode
24. BIOS
------------------------------------------------------------

------------------------------------------------------------
1. uname -a
  Linux localhost.localdomain 5.14.0-362.8.1.el9_3.x86_64 #1 SMP PREEMPT_DYNAMIC Tue Oct 3 11:12:36 EDT 2023
  x86_64 x86_64 x86_64 GNU/Linux

------------------------------------------------------------
2. w
   21:19:15 up  1:19,  1 user,  load average: 14.57, 142.92, 207.44
  USER     TTY        LOGIN@   IDLE   JCPU   PCPU WHAT
  root     tty1      20:02   19.00s  4.68s  0.11s /bin/bash ./amd_rate_aocc400_znver4_A1.sh

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

------------------------------------------------------------
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) 3092161
  max locked memory           (kbytes, -l) 2097152
  max memory size             (kbytes, -m) unlimited
  open files                          (-n) 32768
  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) unlimited
  virtual memory              (kbytes, -v) unlimited
  file locks                          (-x) unlimited

------------------------------------------------------------
5. sysinfo process ancestry
 /usr/lib/systemd/systemd --switched-root --system --deserialize 31
 login -- root
 -bash
 -bash
 python3 ./run_amd_rate_aocc400_znver4_A1.py
 /bin/bash ./amd_rate_aocc400_znver4_A1.sh
 runcpu --config amd_rate_aocc400_znver4_A1.cfg --tune base --reportable --iterations 3 intrate
 runcpu --configfile amd_rate_aocc400_znver4_A1.cfg --tune base --reportable --iterations 3 --nopower
   --runmode rate --tune base --size test:train:refrate intrate --nopreenv --note-preenv --logfile
   $SPEC/tmp/CPU2017.006/templogs/preenv.intrate.006.0.log --lognum 006.0 --from_runcpu 2
 specperl $SPEC/bin/sysinfo
$SPEC = /home/cpu119

------------------------------------------------------------
6. /proc/cpuinfo
```

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## Platform Notes (Continued)

```
     model name      : AMD EPYC 9754 128-Core Processor
     vendor_id       : AuthenticAMD
     cpu family      : 25
     model           : 160
     stepping        : 2
     microcode       : 0xaa00213
     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.

 ------------------------------------------------------------
 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):                              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:                               160
   Thread(s) per core:                  2
   Core(s) per socket:                  128
   Socket(s):                           1
   Stepping:                            2
   Frequency boost:                     enabled
   CPU max MHz:                         3100.3411
   CPU min MHz:                         1500.0000
   BogoMIPS:                            4493.91
   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 invpcid_single hw_pstate ssbd mba perfmon_v2 ibrs ibpb
                                        stibp ibrs_enhanced 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 xsavec xgetbv1 xsaves
                                        cqm_llc cqm_occup_llc cqm_mbm_total cqm_mbm_local 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 overflow_recov succor smca
                                        fsrm flush_l1d
   Virtualization:                      AMD-V
```

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## Platform Notes (Continued)

```
  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):               16-23,144-151
  NUMA node3 CPU(s):               24-31,152-159
  NUMA node4 CPU(s):               32-39,160-167
  NUMA node5 CPU(s):               40-47,168-175
  NUMA node6 CPU(s):               48-55,176-183
  NUMA node7 CPU(s):               56-63,184-191
  NUMA node8 CPU(s):               64-71,192-199
  NUMA node9 CPU(s):               72-79,200-207
  NUMA node10 CPU(s):              80-87,208-215
  NUMA node11 CPU(s):              88-95,216-223
  NUMA node12 CPU(s):              96-103,224-231
  NUMA node13 CPU(s):              104-111,232-239
  NUMA node14 CPU(s):              112-119,240-247
  NUMA node15 CPU(s):              120-127,248-255
  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 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       32K       4M    8 Data            1    64        1             64
     L1i       32K       4M    8 Instruction     1    64        1             64
     L2         1M     128M    8 Unified         2  2048        1             64
     L3        16M     256M   16 Unified         3 16384        1             64

------------------------------------------------------------
8. numactl --hardware
NOTE: a numactl 'node' might or might not correspond to a physical chip.
  available: 16 nodes (0-15)
  node 0 cpus: 0-7,128-135
  node 0 size: 47514 MB
  node 0 free: 46889 MB
  node 1 cpus: 8-15,136-143
  node 1 size: 48379 MB
  node 1 free: 47802 MB
  node 2 cpus: 16-23,144-151
  node 2 size: 48379 MB
  node 2 free: 47782 MB
  node 3 cpus: 24-31,152-159
  node 3 size: 48379 MB
  node 3 free: 47743 MB
  node 4 cpus: 32-39,160-167
  node 4 size: 48379 MB
```

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## Platform Notes (Continued)

```
  node 4 free: 47744 MB
  node 5 cpus: 40-47,168-175
  node 5 size: 48379 MB
  node 5 free: 47737 MB
  node 6 cpus: 48-55,176-183
  node 6 size: 48379 MB
  node 6 free: 47789 MB
  node 7 cpus: 56-63,184-191
  node 7 size: 48379 MB
  node 7 free: 47784 MB
  node 8 cpus: 64-71,192-199
  node 8 size: 48379 MB
  node 8 free: 47785 MB
  node 9 cpus: 72-79,200-207
  node 9 size: 48379 MB
  node 9 free: 47788 MB
  node 10 cpus: 80-87,208-215
  node 10 size: 48379 MB
  node 10 free: 47787 MB
  node 11 cpus: 88-95,216-223
  node 11 size: 48379 MB
  node 11 free: 47770 MB
  node 12 cpus: 96-103,224-231
  node 12 size: 48379 MB
  node 12 free: 47772 MB
  node 13 cpus: 104-111,232-239
  node 13 size: 48379 MB
  node 13 free: 47789 MB
  node 14 cpus: 112-119,240-247
  node 14 size: 48379 MB
  node 14 free: 47802 MB
  node 15 cpus: 120-127,248-255
  node 15 size: 48267 MB
  node 15 free: 47683 MB
  node distances:
  node   0   1   2   3   4   5   6   7   8   9  10  11  12  13  14  15
    0:  10  11  11  11  12  12  12  12  12  12  12  12  12  12  12  12
    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  10  11  11  11  12  12  12  12
    9:  12  12  12  12  12  12  12  12  11  10  11  11  12  12  12  12
   10:  12  12  12  12  12  12  12  12  11  11  10  11  12  12  12  12
   11:  12  12  12  12  12  12  12  12  11  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

------------------------------------------------------------
9. /proc/meminfo
   MemTotal:       791655916 kB

------------------------------------------------------------
10. who -r
  run-level 3 Aug 21 20:00
```

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## Platform Notes (Continued)

```
------------------------------------------------------------
11. Systemd service manager version: systemd 252 (252-18.el9)
  Default Target  Status
  multi-user      degraded

------------------------------------------------------------
12. Failed units, from systemctl list-units --state=failed
    UNIT              LOAD   ACTIVE SUB    DESCRIPTION
  * mdmonitor.service loaded failed failed Software RAID monitoring and management

------------------------------------------------------------
13. Services, from systemctl list-unit-files
  STATE            UNIT FILES
  enabled          ModemManager NetworkManager NetworkManager-dispatcher NetworkManager-wait-online
                   accounts-daemon atd auditd avahi-daemon bluetooth chronyd crond cups dbus-broker gdm
                   getty@ insights-client-boot irqbalance iscsi iscsi-onboot kdump ksm ksmtuned
                   libstoragemgmt lm_sensors low-memory-monitor lvm2-monitor mcelog mdmonitor microcode
                   multipathd nis-domainname nvmefc-boot-connections ostree-remount power-profiles-daemon
                   qemu-guest-agent rhsmcertd rsyslog rtkit-daemon selinux-autorelabel-mark smartd sshd sssd
                   switcheroo-control systemd-boot-update systemd-network-generator tuned udisks2 upower
                   vgauthd vmtoolsd
  enabled-runtime  systemd-remount-fs
  disabled         arp-ethers blk-availability brltty canberra-system-bootup canberra-system-shutdown
                   canberra-system-shutdown-reboot chrony-wait cni-dhcp console-getty cpupower cups-browsed
                   dbus-daemon debug-shell dnf-system-upgrade dnsmasq fancontrol firewalld hwloc-dump-hwdata
                   iprdump iprinit iprupdate iscsid iscsiuio kpatch kvm_stat ledmon
                   man-db-restart-cache-update netavark-dhcp-proxy nftables nvmf-autoconnect
                   ostree-readonly-sysroot-migration podman podman-auto-update podman-clean-transient
                   podman-kube@ podman-restart powertop psacct ras-mc-ctl rasdaemon rdisc rhcd rhsm
                   rhsm-facts rpmdb-rebuild selinux-check-proper-disable serial-getty@ speech-dispatcherd
                   sshd-keygen@ systemd-boot-check-no-failures systemd-pstore systemd-sysext wpa_supplicant
  indirect         spice-vdagentd sssd-autofs sssd-kcm sssd-nss sssd-pac sssd-pam sssd-ssh sssd-sudo
                   systemd-sysupdate systemd-sysupdate-reboot

------------------------------------------------------------
14. Linux kernel boot-time arguments, from /proc/cmdline
  BOOT_IMAGE=(hd0,gpt2)/vmlinuz-5.14.0-362.8.1.el9_3.x86_64
  root=/dev/mapper/rhel-root
  ro
  crashkernel=1G-4G:192M,4G-64G:256M,64G-:512M
  resume=/dev/mapper/rhel-swap
  rd.lvm.lv=rhel/root
  rd.lvm.lv=rhel/swap
  default_hugepagesz=1G
  cgroup_disable=memory,cpu,cpuacct,blkio,hugetlb,pids,cpuset,perf_event,freezer,devices,net_cls,net_prio

------------------------------------------------------------
15. 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
```

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## Platform Notes (Continued)

```
------------------------------------------------------------
16. tuned-adm active
  Current active profile: throughput-performance

------------------------------------------------------------
17. sysctl
  kernel.numa_balancing               0
  kernel.randomize_va_space           0
  vm.compaction_proactiveness        20
  vm.dirty_background_bytes           0
  vm.dirty_background_ratio          40
  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

------------------------------------------------------------
18. /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

------------------------------------------------------------
19. /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    50000

------------------------------------------------------------
20. OS release
  From /etc/*-release /etc/*-version
  os-release     Red Hat Enterprise Linux 9.3 (Plow)
  redhat-release Red Hat Enterprise Linux release 9.3 (Plow)
  system-release Red Hat Enterprise Linux release 9.3 (Plow)

------------------------------------------------------------
21. Disk information
SPEC is set to: /home/cpu119
  Filesystem            Type  Size  Used Avail Use% Mounted on
  /dev/mapper/rhel-home xfs   819G   11G  808G   2% /home

------------------------------------------------------------
22. /sys/devices/virtual/dmi/id
    Vendor:         N/A
    Product:        N/A
```

**(Continued on next page)**

## Platform Notes (Continued)

```
     Product Family: Rack
     Serial:         N/A

 ------------------------------------------------------------
 23. 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:
     12x Micron Technology MTC40F2046S1RC48BA1 64 GB 2 rank 4800


 ------------------------------------------------------------
 24. BIOS
 (This section combines info from /sys/devices and dmidecode.)
    BIOS Vendor:       American Megatrends International, LLC.
    BIOS Version:      6.30.28P91
    BIOS Date:         03/13/2024
    BIOS Revision:     5.27
```

## 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 14.0.6 (CLANG: AOCC_4.0.0-Build#434 2022_10_28) (based on LLVM Mirror.Version.14.0.6)
Target: x86_64-unknown-linux-gnu
Thread model: posix
InstalledDir: /opt/AMD/aocc/aocc-compiler-4.0.0/bin
--------------------------------------------------------------------------------------------------------------

==============================================================================================================
C++     | 520.omnetpp_r(base) 523.xalancbmk_r(base) 531.deepsjeng_r(base) 541.leela_r(base)
--------------------------------------------------------------------------------------------------------------
AMD clang version 14.0.6 (CLANG: AOCC_4.0.0-Build#434 2022_10_28) (based on LLVM Mirror.Version.14.0.6)
Target: x86_64-unknown-linux-gnu
Thread model: posix
InstalledDir: /opt/AMD/aocc/aocc-compiler-4.0.0/bin
--------------------------------------------------------------------------------------------------------------

==============================================================================================================
Fortran | 548.exchange2_r(base)
--------------------------------------------------------------------------------------------------------------
AMD clang version 14.0.6 (CLANG: AOCC_4.0.0-Build#434 2022_10_28) (based on LLVM Mirror.Version.14.0.6)
Target: x86_64-unknown-linux-gnu
Thread model: posix
InstalledDir: /opt/AMD/aocc/aocc-compiler-4.0.0/bin
--------------------------------------------------------------------------------------------------------------
```

## Base Compiler Invocation

C benchmarks:
clang

**(Continued on next page)**

## Base Compiler Invocation (Continued)

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 -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=50
-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=100 -finline-aggressive
-mllvm -loop-unswitch-threshold=200000
-mllvm -reduce-array-computations=3 -zopt
-fvirtual-function-elimination -fvisibility=hidden -lamdlibm -lflang
-lamdalloc-ext

**(Continued on next page)**

## Base Optimization Flags (Continued)

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

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/New_H3C-Platform-AMD-Settings-V1.0-Genoa.html
http://www.spec.org/cpu2017/flags/aocc400-flags.html

You can also download the XML flags sources by saving the following links:
http://www.spec.org/cpu2017/flags/New_H3C-Platform-AMD-Settings-V1.0-Genoa.xml
http://www.spec.org/cpu2017/flags/aocc400-flags.xml


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

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