SPEC CPU®2017 Integer Rate Result

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Inspur Electronic Information Industry Co., Ltd.

N5468A7 (AMD EPYC 9534)

$SPECrate®2017\_int\_base = 1190$
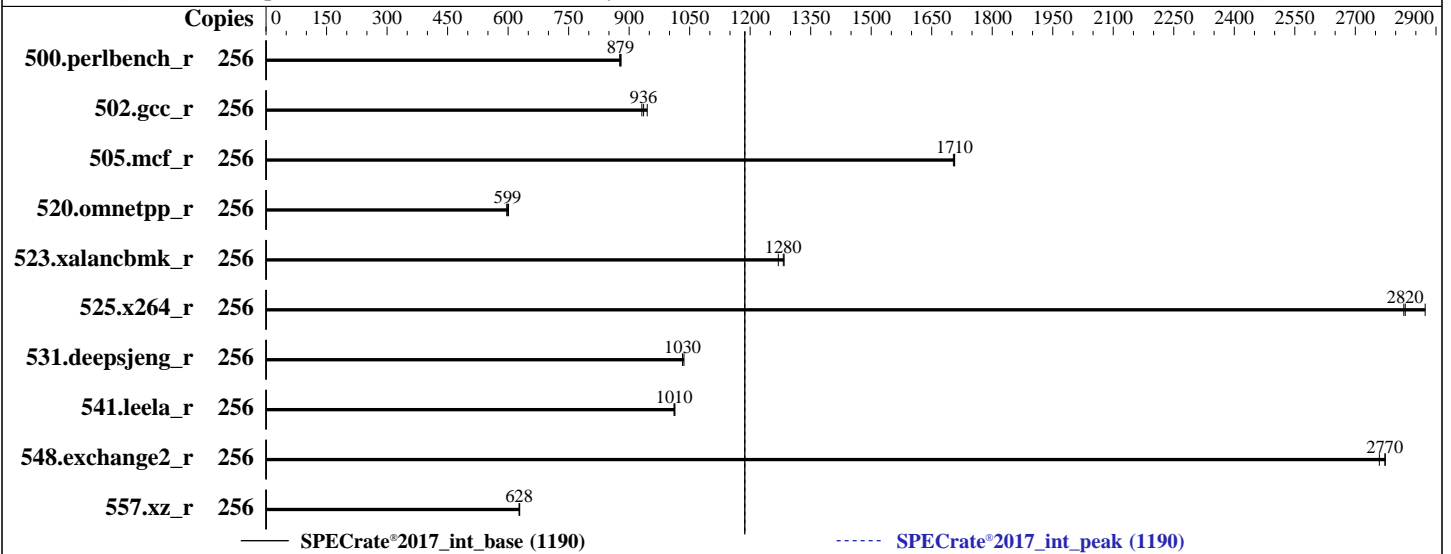
$SPECrate®2017\_int\_peak = 1190$

CPU2017 License: 3358

Test Sponsor: Inspur Electronic Information Industry Co., Ltd.

Tested by: Inspur Electronic Information Industry Co., Ltd.

Test Date: Aug-2023

Hardware Availability: Sep-2023

Software Availability: Nov-2022

Benchmark	Copies	Result
500.perlbench_r	256	879
502.gcc_r	256	936
505.mcf_r	256	1710
520.omnetpp_r	256	599
523.xalancbmk_r	256	1280
525.x264_r	256	2820
531.deepsjeng_r	256	1030
541.leela_r	256	1010
548.exchange2_r	256	2770
557.xz_r	256	628

SPECrate®2017_int_base (1190)

SPECrate®2017_int_peak (1190)

Hardware

CPU Name: AMD EPYC 9534
 Max MHz: 3700
 Nominal: 2450
Enabled: 128 cores, 2 chips, 2 threads/core
Orderable: 1,2 chips
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, 32 MB shared / 8 cores
 Other: None
Memory: 768 GB (24 x 32 GB 2Rx4 PC5-4800B-R)
Storage: 1 x 1 TB NVME SSD
Other: None

Software

OS: Red Hat Enterprise Linux release 9 (Plow)
 5.14.0-70.13.1.el9_0.x86_64
Compiler: C/C++/Fortran: Version 4.0.0 of AOCC
Parallel: No
Firmware: Version 01.09.0 released Jul-2023
File System: xfs
System State: Run level 3 (multi-user)
Base Pointers: 64-bit
Peak Pointers: 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	256	463	880	465	876	**464**	**879**	256	463	880	465	876	**464**	**879**
502.gcc_r	256	384	945	389	932	**387**	**936**	256	384	945	389	932	**387**	**936**
505.mcf_r	256	243	1700	**242**	**1710**	242	1710	256	243	1700	**242**	**1710**	242	1710
520.omnetpp_r	256	559	601	**561**	**599**	563	596	256	559	601	**561**	**599**	563	596
523.xalancbmk_r	256	**211**	**1280**	211	1280	213	1270	256	**211**	**1280**	211	1280	213	1270
525.x264_r	256	156	2870	**159**	**2820**	159	2820	256	156	2870	**159**	**2820**	159	2820
531.deepsjeng_r	256	284	1030	283	1040	**284**	**1030**	256	284	1030	283	1040	**284**	**1030**
541.leela_r	256	419	1010	418	1010	**419**	**1010**	256	419	1010	418	1010	**419**	**1010**
548.exchange2_r	256	**242**	**2770**	243	2760	242	2770	256	**242**	**2770**	243	2760	242	2770
557.xz_r	256	441	627	**441**	**628**	440	629	256	441	627	**441**	**628**	440	629
SPECrate®2017_int_base =	**1190**													
SPECrate®2017_int_peak =	**1190**													

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.
```

Standard Performance Evaluation Corporation (info@spec.org)   https://www.spec.org/

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Environment Variables Notes

```
Environment variables set by runcpu before the start of the run:
LD_LIBRARY_PATH =
     "/home/CPU2017/amd_rate_aocc400_genoa_B_lib/lib:/home/CPU2017/amd_rate_aocc400_genoa_B_lib/lib32:"
MALLOC_CONF = "retain:true"
```

General Notes

```
Binaries were compiled on a system with 2x AMD EPYC 9174F CPU + 1.5TiB Memory using RHEL 8.6

NA: The test sponsor attests, as of date of publication, that CVE-2017-5754 (Meltdown)
is mitigated in the system as tested and documented.
Yes: The test sponsor attests, as of date of publication, that CVE-2017-5753 (Spectre variant 1)
is mitigated in the system as tested and documented.
Yes: The test sponsor attests, as of date of publication, that CVE-2017-5715 (Spectre variant 2)
is mitigated in the system as tested and documented.
```

Platform Notes

```
 BIOS configuration:
 SVM Mode = disable
 DRAM Scrub time = disable
 NUMA nodes per socket = NPS4
 Determinism Slider = Power
 cTDP = 400
 Package Power Limit = 400

 Sysinfo program /home/CPU2017/bin/sysinfo
 Rev: r6732 of 2022-11-07 fe91c89b7ed5c36ae2c92cc097bec197
 running on localhost.localdomain Tue Aug 22 00:20:25 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.el9_0)
 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
```

(Continued on next page)

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Platform Notes (Continued)

```
   22. dmidecode
   23. 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
      00:20:25 up 21 min,  1 user,  load average: 0.29, 0.14, 0.40
     USER     TTY        LOGIN@   IDLE   JCPU   PCPU WHAT
     root     tty1       07Jan23 41.00s  1.59s  0.29s /bin/bash ./amd_rate_aocc400_genoa_B1.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) 3094476
     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) 819200
     real-time priority                  (-r) 0
     stack size                  (kbytes, -s) unlimited
     cpu time                   (seconds, -t) unlimited
     max user processes                  (-u) 3094476
     virtual memory              (kbytes, -v) unlimited
     file locks                          (-x) unlimited

   ------------------------------------------------------------
   5. sysinfo process ancestry
    /usr/lib/systemd/systemd --switched-root --system --deserialize 30
    login -- root
    -bash
    python3 ./run_amd_rate_aocc400_genoa_B1.py
    /bin/bash ./amd_rate_aocc400_genoa_B1.sh
    runcpu --config amd_rate_aocc400_genoa_B1.cfg --tune base --reportable --iterations 3 intrate
    runcpu --configfile amd_rate_aocc400_genoa_B1.cfg --tune base --reportable --iterations 3 --nopower
      --runmode rate --tune base --size test:train:refrate intrate --nopreenv --note-preenv --logfile
      $SPEC/tmp/CPU2017.026/templogs/preenv.intrate.026.0.log --lognum 026.0 --from_runcpu 2
    specperl $SPEC/bin/sysinfo
   $SPEC = /home/CPU2017

   ------------------------------------------------------------
   6. /proc/cpuinfo
       model name      : AMD EPYC 9534 64-Core Processor
       vendor_id       : AuthenticAMD
       cpu family      : 25
       model           : 17
       stepping        : 1
```

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Platform Notes (Continued)

```
        microcode       : 0xa101139
        bugs            : sysret_ss_attrs spectre_v1 spectre_v2 spec_store_bypass
        TLB size        : 3584 4K pages
        cpu cores       : 64
        siblings        : 128
        2 physical ids (chips)
        256 processors (hardware threads)
        physical id 0: core ids 0-63
        physical id 1: core ids 0-63
        physical id 0: apicids 0-127
        physical id 1: apicids 128-255
     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 9534 64-Core Processor
       BIOS Model name:           AMD EPYC 9534 64-Core Processor
       CPU family:                25
       Model:                     17
       Thread(s) per core:        2
       Core(s) per socket:        64
       Socket(s):                 2
       Stepping:                  1
       Frequency boost:           enabled
       CPU max MHz:               3718.0659
       CPU min MHz:               1500.0000
       BogoMIPS:                  4899.88
       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
                                  xsavec 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_l1d
       Virtualization:            AMD-V
       L1d cache:                 4 MiB (128 instances)
       L1i cache:                 4 MiB (128 instances)
       L2 cache:                  128 MiB (128 instances)
       L3 cache:                  512 MiB (16 instances)
       NUMA node(s):              16
```

(Continued on next page)

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Platform Notes (Continued)

```
  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 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 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        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: 16 nodes (0-15)
    node 0 cpus: 0-7,128-135
    node 0 size: 48174 MB
    node 0 free: 47804 MB
    node 1 cpus: 8-15,136-143
    node 1 size: 48377 MB
    node 1 free: 48060 MB
    node 2 cpus: 16-23,144-151
    node 2 size: 48377 MB
    node 2 free: 47857 MB
    node 3 cpus: 24-31,152-159
    node 3 size: 48377 MB
    node 3 free: 48040 MB
    node 4 cpus: 32-39,160-167
    node 4 size: 48377 MB
    node 4 free: 48041 MB
    node 5 cpus: 40-47,168-175
    node 5 size: 48377 MB
    node 5 free: 48081 MB
    node 6 cpus: 48-55,176-183
    node 6 size: 48340 MB
    node 6 free: 48037 MB
    node 7 cpus: 56-63,184-191
```

(Continued on next page)

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Platform Notes (Continued)

```
   node 7 size: 48377 MB
   node 7 free: 48062 MB
   node 8 cpus: 64-71,192-199
   node 8 size: 48377 MB
   node 8 free: 48032 MB
   node 9 cpus: 72-79,200-207
   node 9 size: 48377 MB
   node 9 free: 48053 MB
   node 10 cpus: 80-87,208-215
   node 10 size: 48377 MB
   node 10 free: 48055 MB
   node 11 cpus: 88-95,216-223
   node 11 size: 48377 MB
   node 11 free: 48047 MB
   node 12 cpus: 96-103,224-231
   node 12 size: 48377 MB
   node 12 free: 47927 MB
   node 13 cpus: 104-111,232-239
   node 13 size: 48377 MB
   node 13 free: 47800 MB
   node 14 cpus: 112-119,240-247
   node 14 size: 48377 MB
   node 14 free: 48075 MB
   node 15 cpus: 120-127,248-255
   node 15 size: 48305 MB
   node 15 free: 47985 MB
   node distances:
   node   0   1   2   3   4   5   6   7   8   9  10  11  12  13  14  15
     0:  10  11  12  12  12  12  12  12  32  32  32  32  32  32  32  32
     1:  11  10  12  12  12  12  12  12  32  32  32  32  32  32  32  32
     2:  12  12  10  11  12  12  12  12  32  32  32  32  32  32  32  32
     3:  12  12  11  10  12  12  12  12  32  32  32  32  32  32  32  32
     4:  12  12  12  12  10  11  12  12  32  32  32  32  32  32  32  32
     5:  12  12  12  12  11  10  12  12  32  32  32  32  32  32  32  32
     6:  12  12  12  12  12  12  10  11  32  32  32  32  32  32  32  32
     7:  12  12  12  12  12  12  11  10  32  32  32  32  32  32  32  32
     8:  32  32  32  32  32  32  32  32  10  11  12  12  12  12  12  12
     9:  32  32  32  32  32  32  32  32  11  10  12  12  12  12  12  12
    10:  32  32  32  32  32  32  32  32  12  12  10  11  12  12  12  12
    11:  32  32  32  32  32  32  32  32  12  12  11  10  12  12  12  12
    12:  32  32  32  32  32  32  32  32  12  12  12  12  10  11  12  12
    13:  32  32  32  32  32  32  32  32  12  12  12  12  11  10  12  12
    14:  32  32  32  32  32  32  32  32  12  12  12  12  12  12  10  11
    15:  32  32  32  32  32  32  32  32  12  12  12  12  12  12  11  10

   --------------------------------------------------------------
 9. /proc/meminfo
    MemTotal:       792293260 kB


   --------------------------------------------------------------
10. who -r
   run-level 3 Jan 7 20:25


   --------------------------------------------------------------
11. Systemd service manager version: systemd 250 (250-6.el9_0)
    Default Target  Status
    multi-user      degraded

   --------------------------------------------------------------
12. Failed units, from systemctl list-units --state=failed
```

(Continued on next page)

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Platform Notes (Continued)

```
    UNIT                      LOAD    ACTIVE SUB    DESCRIPTION
 * dnf-makecache.service loaded failed failed dnf makecache


   ------------------------------------------------------------
13. Services, from systemctl list-unit-files
  STATE             UNIT FILES
  enabled           NetworkManager NetworkManager-dispatcher NetworkManager-wait-online auditd chronyd crond
                    dbus-broker firewalld getty@ irqbalance kdump lvm2-monitor mdmonitor microcode
                    nis-domainname rhsmcertd rsyslog selinux-autorelabel-mark sshd sssd
                    systemd-network-generator udisks2 upower
  enabled-runtime   systemd-remount-fs
  disabled          blk-availability canberra-system-bootup canberra-system-shutdown
                    canberra-system-shutdown-reboot chrony-wait console-getty cpupower debug-shell kvm_stat
                    man-db-restart-cache-update nftables rdisc rhsm rhsm-facts rpmdb-rebuild serial-getty@
                    sshd-keygen@ systemd-boot-check-no-failures systemd-pstore systemd-sysext
  indirect          sssd-autofs sssd-kcm sssd-nss sssd-pac sssd-pam sssd-ssh sssd-sudo


   ------------------------------------------------------------
14. Linux kernel boot-time arguments, from /proc/cmdline
  BOOT_IMAGE=(hd1,gpt2)/vmlinuz-5.14.0-70.13.1.el9_0.x86_64
  root=/dev/mapper/rhel00-root
  ro
  resume=/dev/mapper/rhel00-swap
  rd.lvm.lv=rhel00/root
  rd.lvm.lv=rhel00/swap


   ------------------------------------------------------------
15. cpupower frequency-info
  analyzing CPU 0:
    current policy: frequency should be within 1.50 GHz and 2.45 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:  2450MHz


   ------------------------------------------------------------
16. sysctl
  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     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
```

(Continued on next page)

SPEC CPU®2017 Integer Rate Result

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Inspur Electronic Information Industry Co., Ltd.

N5468A7 (AMD EPYC 9534)

SPECrate®2017_int_base = 1190

SPECrate®2017_int_peak = 1190

CPU2017 License: 3358
Test Sponsor: Inspur Electronic Information Industry Co., Ltd.
Tested by: Inspur Electronic Information Industry Co., Ltd.

Test Date: Aug-2023
Hardware Availability: Sep-2023
Software Availability: Nov-2022

Platform Notes (Continued)

```
    ----------------------------------------------------------------
17. /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


    ----------------------------------------------------------------
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 9.0 (Plow)
    redhat-release  Red Hat Enterprise Linux release 9.0 (Plow)
    system-release  Red Hat Enterprise Linux release 9.0 (Plow)


    ----------------------------------------------------------------
20. Disk information
SPEC is set to: /home/CPU2017
    Filesystem              Type  Size  Used Avail Use% Mounted on
    /dev/mapper/rhel00-home xfs   819G   16G  803G   2% /home


    ----------------------------------------------------------------
21. /sys/devices/virtual/dmi/id
    Vendor:         Inspur
    Product:        NF5468-A7-A0-R0-00
    Product Family: Not specified
    Serial:         000000000


    ----------------------------------------------------------------
22. 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:
    24x Samsung M321R4GA3BB6-CQKEG 32 GB 2 rank 4800



    ----------------------------------------------------------------
23. BIOS
(This section combines info from /sys/devices and dmidecode.)
  BIOS Vendor:      American Megatrends International, LLC.
  BIOS Version:     01.09.00
  BIOS Date:        07/07/2023
```

Compiler Version Notes

```
==============================================================================================
C      | 500.perlbench_r(base) 502.gcc_r(base) 505.mcf_r(base) 525.x264_r(base) 557.xz_r(base)
```

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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: x86_64-unknown-linux-gnu
Thread model: posix
InstalledDir: /opt/AMD/aocc/aocc-compiler-rel-4.0-3206-389/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#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
--------------------------------------------------------------------------------


================================================================================
Fortran | 548.exchange2_r(base)
--------------------------------------------------------------------------------
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

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`

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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
```

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
```

Standard Performance Evaluation Corporation (info@spec.org)   https://www.spec.org/

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Peak Optimization Flags

C benchmarks:

500.perlbench_r: `basepeak = yes`

502.gcc_r: `basepeak = yes`

505.mcf_r: `basepeak = yes`

525.x264_r: `basepeak = yes`

557.xz_r: `basepeak = yes`

C++ benchmarks:

520.omnetpp_r: `basepeak = yes`

523.xalancbmk_r: `basepeak = yes`

531.deepsjeng_r: `basepeak = yes`

541.leela_r: `basepeak = yes`

Fortran benchmarks:

548.exchange2_r: `basepeak = yes`

The flags files that were used to format this result can be browsed at
`http://www.spec.org/cpu2017/flags/aocc400-flags.html`
`http://www.spec.org/cpu2017/flags/Inspur-Platform-Settings-amd-V3.0.html`

You can also download the XML flags sources by saving the following links:
`http://www.spec.org/cpu2017/flags/aocc400-flags.xml`
`http://www.spec.org/cpu2017/flags/Inspur-Platform-Settings-amd-V3.0.xml`

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

Tested with SPEC CPU®2017 v1.1.9 on 2023-08-22 00:20:25-0400.
Report generated on 2023-09-13 14:49:44 by CPU2017 PDF formatter v6716.
Originally published on 2023-09-13.