SPEC CPU®2017 Integer Rate Result

Copyright 2017-2023 Standard Performance Evaluation Corporation

Inspur Electronic Information Industry Co., Ltd. (IEI)

NF5280A7 (AMD EPYC 9554)

$SPECrate®2017\_int\_base = 1320$

$SPECrate®2017\_int\_peak = 1400$

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

Test Date: Apr-2023
Hardware Availability: Feb-2023
Software Availability: Nov-2022

Benchmark	Copies	base	peak
500.perlbench_r	256	992	
502.gcc_r	256	1010	1300
505.mcf_r	256	1920	1920
520.omnetpp_r	256	611	
523.xalancbmk_r	256	1400	1880
525.x264_r	256	3440	
531.deepsjeng_r	256	1170	1170
541.leela_r	256	1130	
548.exchange2_r	256	3260	3260
557.xz_r	256	662	665

——— SPECrate®2017_int_base (1320)   ------- SPECrate®2017_int_peak (1400)

Hardware

CPU Name: AMD EPYC 9554
Max MHz: 3750
Nominal: 3100
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: 1536 GB (24 x 64 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 04.02.14 released Dec-2022
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.

SPEC CPU®2017 Integer Rate Result

Copyright 2017-2023 Standard Performance Evaluation Corporation

Inspur Electronic Information Industry Co., Ltd. (IEI)

NF5280A7 (AMD EPYC 9554)

SPECrate®2017_int_base = 1320

SPECrate®2017_int_peak = 1400

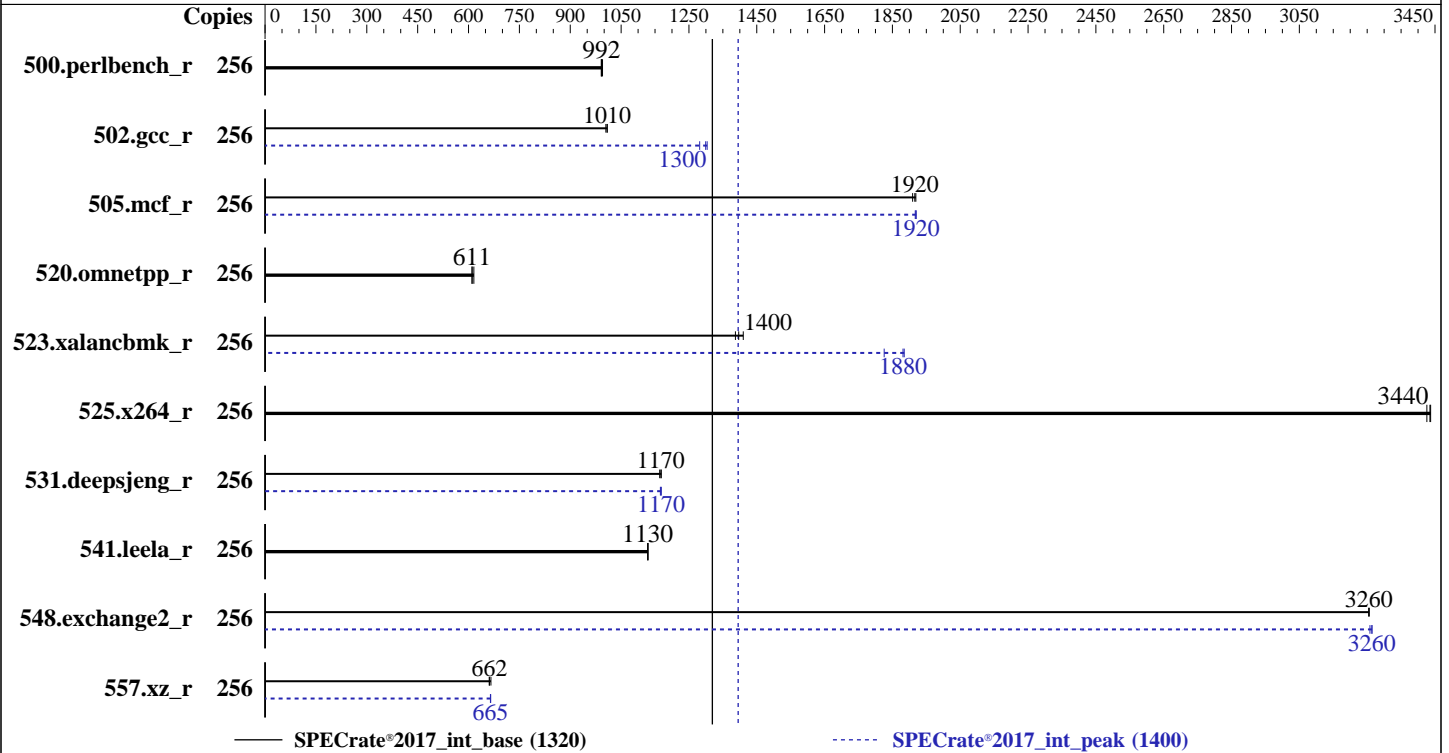| **CPU2017 License:** 3358	**Test Date:** Apr-2023
Test Sponsor: Inspur Electronic Information Industry Co., Ltd. (IEI)	**Hardware Availability:** Feb-2023
Tested by: Inspur Electronic Information Industry Co., Ltd. (IEI)	**Software Availability:** Nov-2022

Results Table

Benchmark	Base						Peak						
	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
500.perlbench_r	256	410	995	**411**	**992**	411	991	256	410	995	**411**	**992**	411	991
502.gcc_r	256	**359**	**1010**	361	1000	359	1010	256	278	1300	**279**	**1300**	283	1280
505.mcf_r	256	**216**	**1920**	216	1920	217	1910	256	216	1920	**216**	**1920**	215	1920
520.omnetpp_r	256	**550**	**611**	546	616	550	610	256	**550**	**611**	546	616	550	610
523.xalancbmk_r	256	**194**	**1400**	195	1390	192	1410	256	143	1880	**144**	**1880**	148	1830
525.x264_r	256	**130**	**3440**	131	3430	130	3440	256	**130**	**3440**	131	3430	130	3440
531.deepsjeng_r	256	**251**	**1170**	252	1160	251	1170	256	252	1170	**251**	**1170**	251	1170
541.leela_r	256	376	1130	375	1130	**376**	**1130**	256	376	1130	375	1130	**376**	**1130**
548.exchange2_r	256	**206**	**3260**	206	3260	206	3250	256	205	3260	206	3260	**205**	**3260**
557.xz_r	256	418	661	415	666	**418**	**662**	256	416	665	**416**	**665**	416	665
SPECrate®2017_int_base =	**1320**												
SPECrate®2017_int_peak =	**1400**												

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/

SPEC CPU®2017 Integer Rate Result

Copyright 2017-2023 Standard Performance Evaluation Corporation

Inspur Electronic Information Industry Co., Ltd. (IEI)

NF5280A7 (AMD EPYC 9554)

SPECrate®2017_int_base = 1320

SPECrate®2017_int_peak = 1400

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

Test Date: Apr-2023
Hardware Availability: Feb-2023
Software Availability: Nov-2022

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"

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:
 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 Thu Apr 27 10:13:07 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. Services, from systemctl list-unit-files
 13. Linux kernel boot-time arguments, from /proc/cmdline
 14. cpupower frequency-info
 15. tuned-adm active
 16. sysctl
 17. /sys/kernel/mm/transparent_hugepage
 18. /sys/kernel/mm/transparent_hugepage/khugepaged
```

(Continued on next page)

Inspur Electronic Information Industry Co., Ltd. (IEI)

NF5280A7 (AMD EPYC 9554)

SPECrate®2017_int_base = 1320

SPECrate®2017_int_peak = 1400

CPU2017 License: 3358   **Test Date:** Apr-2023

Test Sponsor: Inspur Electronic Information Industry Co., Ltd. (IEI)   **Hardware Availability:** Feb-2023

Tested by: Inspur Electronic Information Industry Co., Ltd. (IEI)   **Software Availability:** Nov-2022

Platform Notes (Continued)

```
  19. OS release
  20. Disk information
  21. /sys/devices/virtual/dmi/id
  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
     10:13:07 up 1 min,  1 user,  load average: 1.43, 0.63, 0.23
    USER     TTY        LOGIN@   IDLE   JCPU   PCPU WHAT
    root     tty1       10:12   17.00s  1.32s  0.21s /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) 6191111
    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) 6191111
    virtual memory              (kbytes, -v) unlimited
    file locks                          (-x) unlimited


  --------------------------------------------------------------
  5. sysinfo process ancestry
   /usr/lib/systemd/systemd --switched-root --system --deserialize 18
   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 all --reportable --iterations 3 intrate
   runcpu --configfile amd_rate_aocc400_genoa_B1.cfg --tune all --reportable --iterations 3 --nopower --runmode
     rate --tune base:peak --size test:train:refrate intrate --nopreenv --note-preenv --logfile
     $SPEC/tmp/CPU2017.008/templogs/preenv.intrate.008.0.log --lognum 008.0 --from_runcpu 2
   specperl $SPEC/bin/sysinfo
  $SPEC = /home/CPU2017


  --------------------------------------------------------------
  6. /proc/cpuinfo
      model name       : AMD EPYC 9554 64-Core Processor
      vendor_id        : AuthenticAMD
```

(Continued on next page)

SPEC CPU®2017 Integer Rate Result

Copyright 2017-2023 Standard Performance Evaluation Corporation

Inspur Electronic Information Industry Co., Ltd. (IEI)

NF5280A7 (AMD EPYC 9554)

SPECrate®2017_int_base = 1320

SPECrate®2017_int_peak = 1400

CPU2017 License: 3358   **Test Date:** Apr-2023
Test Sponsor: Inspur Electronic Information Industry Co., Ltd. (IEI)   **Hardware Availability:** Feb-2023
Tested by: Inspur Electronic Information Industry Co., Ltd. (IEI)   **Software Availability:** Nov-2022

Platform Notes (Continued)

```
      cpu family     : 25
      model          : 17
      stepping       : 1
      microcode      : 0xa101111
      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 9554 64-Core Processor
   BIOS Model name:         AMD EPYC 9554 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:             3762.9880
   CPU min MHz:             1500.0000
   BogoMIPS:                6199.87
   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)
```

(Continued on next page)

Inspur Electronic Information Industry Co., Ltd. (IEI)

NF5280A7 (AMD EPYC 9554)

$SPECrate®2017\_int\_base = 1320$

$SPECrate®2017\_int\_peak = 1400$

CPU2017 License: 3358   **Test Date:**   Apr-2023
Test Sponsor: Inspur Electronic Information Industry Co., Ltd. (IEI)   **Hardware Availability:** Feb-2023
Tested by: Inspur Electronic Information Industry Co., Ltd. (IEI)   **Software Availability:** Nov-2022

Platform Notes (Continued)

```
   L2 cache:                      128 MiB (128 instances)
   L3 cache:                      512 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 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: 96572 MB
   node 0 free: 96150 MB
   node 1 cpus: 8-15,136-143
   node 1 size: 96761 MB
   node 1 free: 96413 MB
   node 2 cpus: 16-23,144-151
   node 2 size: 96761 MB
   node 2 free: 96325 MB
   node 3 cpus: 24-31,152-159
   node 3 size: 96761 MB
   node 3 free: 96264 MB
   node 4 cpus: 32-39,160-167
   node 4 size: 96724 MB
   node 4 free: 96229 MB
   node 5 cpus: 40-47,168-175
   node 5 size: 96761 MB
   node 5 free: 96416 MB
   node 6 cpus: 48-55,176-183
```

(Continued on next page)

SPEC CPU®2017 Integer Rate Result

Copyright 2017-2023 Standard Performance Evaluation Corporation

Inspur Electronic Information Industry Co., Ltd. (IEI)

NF5280A7 (AMD EPYC 9554)

SPECrate®2017_int_base = 1320

SPECrate®2017_int_peak = 1400

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

Test Date: Apr-2023
Hardware Availability: Feb-2023
Software Availability: Nov-2022

Platform Notes (Continued)

```
    node 6 size: 96761 MB
    node 6 free: 96144 MB
    node 7 cpus: 56-63,184-191
    node 7 size: 96761 MB
    node 7 free: 96275 MB
    node 8 cpus: 64-71,192-199
    node 8 size: 96761 MB
    node 8 free: 96220 MB
    node 9 cpus: 72-79,200-207
    node 9 size: 96761 MB
    node 9 free: 96105 MB
    node 10 cpus: 80-87,208-215
    node 10 size: 96761 MB
    node 10 free: 96388 MB
    node 11 cpus: 88-95,216-223
    node 11 size: 96761 MB
    node 11 free: 96439 MB
    node 12 cpus: 96-103,224-231
    node 12 size: 96761 MB
    node 12 free: 96368 MB
    node 13 cpus: 104-111,232-239
    node 13 size: 96761 MB
    node 13 free: 96372 MB
    node 14 cpus: 112-119,240-247
    node 14 size: 96761 MB
    node 14 free: 96377 MB
    node 15 cpus: 120-127,248-255
    node 15 size: 96689 MB
    node 15 free: 96380 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:      1585031200 kB


    ----------------------------------------------------------
    10. who -r
      run-level 3 Apr 27 10:12


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

Inspur Electronic Information Industry Co., Ltd. (IEI)

NF5280A7 (AMD EPYC 9554)

SPECrate®2017_int_base = 1320

SPECrate®2017_int_peak = 1400

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

Test Date: Apr-2023
Hardware Availability: Feb-2023
Software Availability: Nov-2022

Platform Notes (Continued)

```
          ----------------------------------------------------------
          12. 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 tuned 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
                             hwloc-dump-hwdata 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

          ----------------------------------------------------------
          13. Linux kernel boot-time arguments, from /proc/cmdline
            BOOT_IMAGE=(hd0,gpt2)/vmlinuz-5.14.0-70.13.1.el9_0.x86_64
            root=/dev/mapper/rhel-root
            ro
            resume=/dev/mapper/rhel-swap
            rd.lvm.lv=rhel/root
            rd.lvm.lv=rhel/swap

          ----------------------------------------------------------
          14. cpupower frequency-info
            analyzing CPU 0:
              current policy: frequency should be within 1.50 GHz and 3.10 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:  3100MHz

          ----------------------------------------------------------
          15. tuned-adm active
            Current active profile: throughput-performance

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

(Continued on next page)

Inspur Electronic Information Industry Co., Ltd. (IEI)

NF5280A7 (AMD EPYC 9554)

SPECrate®2017_int_base = 1320

SPECrate®2017_int_peak = 1400

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

Test Date: Apr-2023
Hardware Availability: Feb-2023
Software Availability: Nov-2022

Platform Notes (Continued)

```
  vm.watermark_boost_factor     15000
  vm.watermark_scale_factor        10
  vm.zone_reclaim_mode              1


  ---------------------------------------------------------------
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/rhel-home xfs   819G   14G  805G   2% /home


  ---------------------------------------------------------------
21. /sys/devices/virtual/dmi/id
    Vendor:        IEI
    Product:       NF5280A7
    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:
    1x Samsung M321R8GA0BB0-CQKDS 64 GB 2 rank 4800
    23x Samsung M321R8GA0BB0-CQKMG 64 GB 2 rank 4800



  ---------------------------------------------------------------
23. BIOS
(This section combines info from /sys/devices and dmidecode.)
  BIOS Vendor:      American Megatrends International, LLC.
  BIOS Version:     04.02.14
  BIOS Date:        12/29/2022
```

SPEC CPU®2017 Integer Rate Result

Copyright 2017-2023 Standard Performance Evaluation Corporation

Inspur Electronic Information Industry Co., Ltd. (IEI)

NF5280A7 (AMD EPYC 9554)

SPECrate®2017_int_base = 1320

SPECrate®2017_int_peak = 1400

CPU2017 License: 3358   **Test Date:** Apr-2023
Test Sponsor: Inspur Electronic Information Industry Co., Ltd. (IEI)   **Hardware Availability:** Feb-2023
Tested by: Inspur Electronic Information Industry Co., Ltd. (IEI)   **Software Availability:** Nov-2022

Compiler Version Notes

```
==============================================================================
C        | 502.gcc_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        | 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)
------------------------------------------------------------------------------
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)
------------------------------------------------------------------------------
```

Inspur Electronic Information Industry Co., Ltd. (IEI)

NF5280A7 (AMD EPYC 9554)

SPECrate®2017_int_base = 1320

SPECrate®2017_int_peak = 1400

CPU2017 License: 3358　　　　　　　　　　　　　　　　　　**Test Date:** Apr-2023
Test Sponsor: Inspur Electronic Information Industry Co., Ltd. (IEI)　**Hardware Availability:** Feb-2023
Tested by: Inspur Electronic Information Industry Co., Ltd. (IEI)　**Software Availability:** Nov-2022

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++    | 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
------------------------------------------------------------------------------------------------

================================================================================================
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

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`

SPEC CPU®2017 Integer Rate Result

Copyright 2017-2023 Standard Performance Evaluation Corporation

Inspur Electronic Information Industry Co., Ltd. (IEI)

NF5280A7 (AMD EPYC 9554)

SPECrate®2017_int_base = 1320

SPECrate®2017_int_peak = 1400

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

Test Date: Apr-2023
Hardware Availability: Feb-2023
Software Availability: Nov-2022

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/

SPEC CPU®2017 Integer Rate Result

Copyright 2017-2023 Standard Performance Evaluation Corporation

Inspur Electronic Information Industry Co., Ltd. (IEI)

NF5280A7 (AMD EPYC 9554)

SPECrate®2017_int_base = 1320

SPECrate®2017_int_peak = 1400

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

Test Date: Apr-2023
Hardware Availability: Feb-2023
Software Availability: Nov-2022

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: `-D_FILE_OFFSET_BITS=64`
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`

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: `-m64 -flto -Wl,-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`

(Continued on next page)

Inspur Electronic Information Industry Co., Ltd. (IEI)

NF5280A7 (AMD EPYC 9554)

SPECrate®2017_int_base = 1320

SPECrate®2017_int_peak = 1400

Peak Optimization Flags (Continued)

505.mcf_r (continued):
```
-lflang -lamdalloc
```

525.x264_r: basepeak = yes

557.xz_r: Same as 505.mcf_r

C++ benchmarks:

520.omnetpp_r: basepeak = yes

523.xalancbmk_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 -fvisibility=hidden
-lamdalloc-ext
```

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-aggressive
-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-strided-mem-cost -floop-transform
-mllvm -unroll-aggressive -mllvm -unroll-threshold=500 -lamdlibm
-lflang -lamdalloc
```

Inspur Electronic Information Industry Co., Ltd. (IEI)

NF5280A7 (AMD EPYC 9554)

SPECrate®2017_int_base = 1320

SPECrate®2017_int_peak = 1400

CPU2017 License:	3358	**Test Date:**	Apr-2023
Test Sponsor:	Inspur Electronic Information Industry Co., Ltd. (IEI)	**Hardware Availability:**	Feb-2023
Tested by:	Inspur Electronic Information Industry Co., Ltd. (IEI)	**Software Availability:**	Nov-2022

Peak Other Flags

C benchmarks (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
```

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 2023-04-27 10:13:07-0400.
Report generated on 2023-05-23 19:01:49 by CPU2017 PDF formatter v6716.
Originally published on 2023-05-23.